

# CEMENT HOUSES AND PRIVATE GARAGES

WITH  
CONSTRUCTIVE DETAILS



Volume No. 5  
Building Age Series of Designs



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BUILDING AGE SERIES No. 5

# CEMENT HOUSES AND PRIVATE GARAGES

## WITH CONSTRUCTIVE DETAILS

BY NUMEROUS ARCHITECTS

COMPRISING twenty-two designs of artistic cement-coated dwellings ranging in cost from \$1,250 to \$16,500, and eleven cleverly designed private garages costing from \$500 to \$10,000. A feature is the presentation of complete floor plans, elevations and constructive details. These are all drawn to scale and show interior and exterior finish. Extracts from the specifications and bills of material are included with several of the drawings.

Illustrated with half-tone reproductions from photographs of the completed structures, and eighty-seven full-page plates of plans and elevations

NEW YORK  
DAVID WILLIAMS COMPANY

231-241 WEST 39TH STREET

1912



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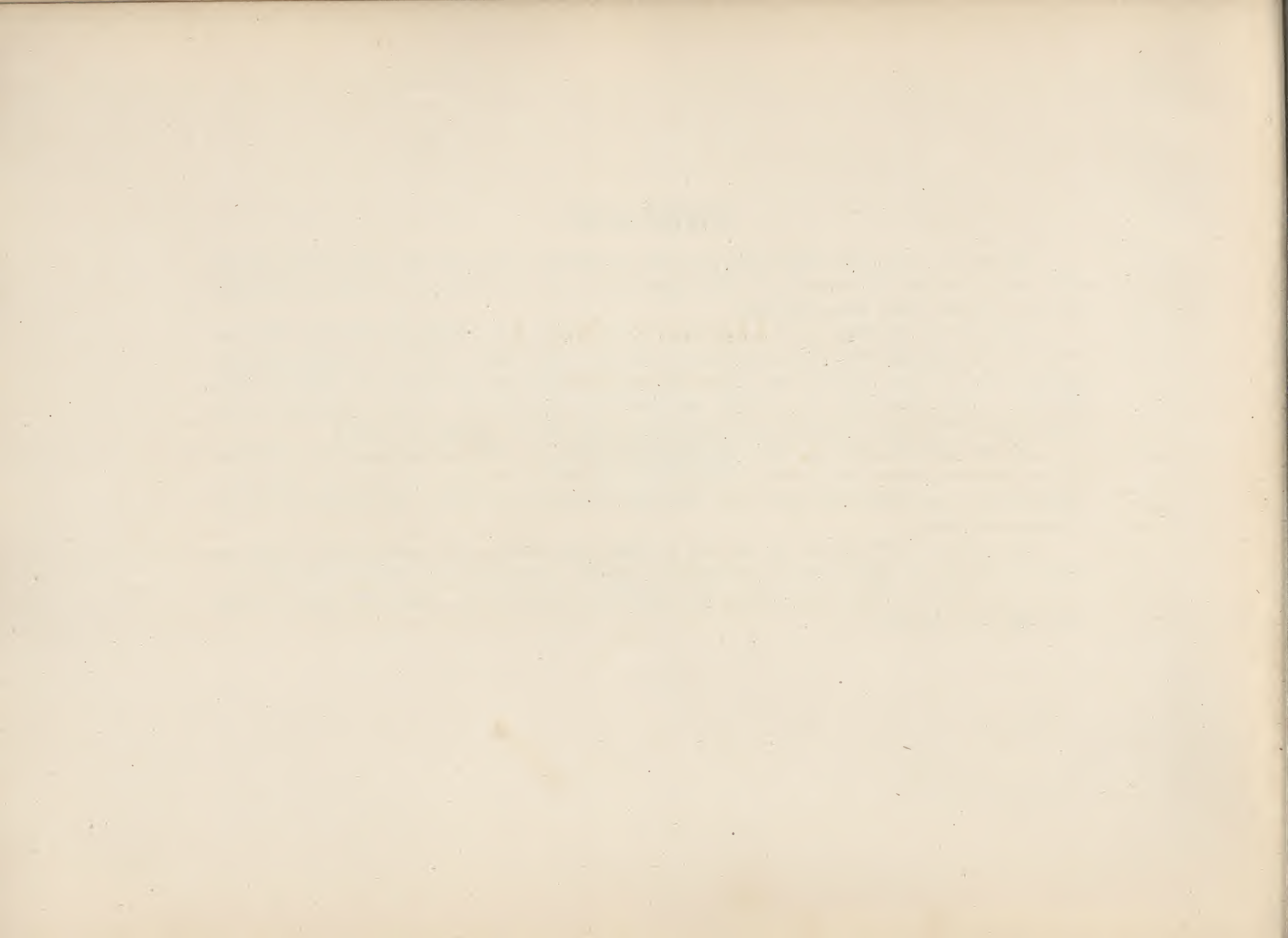
## PREFACE

THE designs given in this volume will prove welcome additions to the collection of the builder and real estate operator because of the scarcity of artistic suggestions to aid his customers, in selecting or illustrating the style of cement coated house they desire.

Every one of the designs given is high class in every respect and a majority of them have been used in erecting structures that have given satisfaction and pleasure to the owners. They were designed by prominent architects in various sections of the country and special attention has been given to the layout of rooms, halls, etc., to insure convenient use, good light and ventilation. In many cases half-tone engravings showing exterior and interior views reproduced from photographs of the finished dwelling are included.

All the plans are drawn to scale and may well be used for actual construction if it is so desired. Extracts from the specifications and bills of materials are frequently quoted. Those wishing further information regarding any of the designs may secure it by addressing the architects or owners. The addresses of both are given on each plate.

The publishers will welcome any criticisms or suggestions relating to the designs in this volume and invite the users of the work to submit photographs of attractive adaptations of the designs shown herein or of any others which combine artistic features, and convenient arrangements of rooms with regard to accessibility, light and ventilation.





## DESIGN No. 1

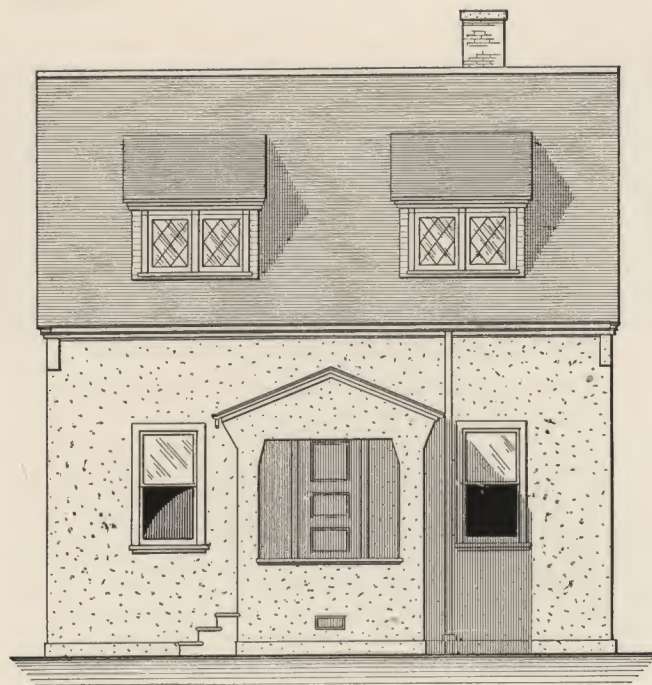
**\$1250 and \$1500**

IN this design there is presented the floor plans and elevations of a low cost cottage, made with metal lath and cement exterior, estimated to cost \$1,500; also, of a cottage that can be built for \$1,250.

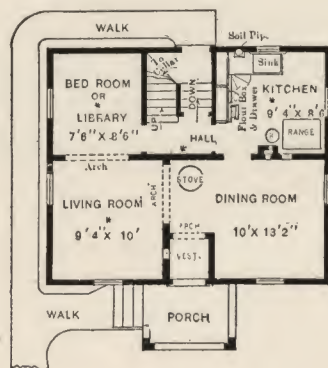
According to specifications, the cottages are of balloon frame construction, with exterior walls from base to cornice, of rough cast plaster laid on metal lath securely attached to the studding, while the roofs and vertical walls of dormers are covered with 16-in. red cedar shingles laid 5½ in. to the weather on the side walls, and 5 in. to the weather, on the roofs. The floor joist are covered with 7/8 x 2½ in. matched flooring; the walls and ceilings lathed and plastered with one coat patent pulp plaster, and the window sash hung with weights and cord, and glazed with double thickness sheet glass. The front doors are 1¾ in. thick, neatly paneled and molded with glass in upper

panels, while the rear doors are 1¾ in. thick, with double thickness glass in the upper panels. All other regular doors are 1¾ in. thick, with four panels. Provision is made for heating, by furnace in the cellar, although the designs show stoves for heating the two main rooms on the first floors, and sleeping rooms on the second floors. The plumbing fixtures, include kitchen sink and hot water boiler, and a low down combination water closet and tank, an iron enameled washbasin, and iron enameled bathtub are in the bathroom. The houses are piped for gas, and provided with electric bells operated with push buttons at the front doors.

The exterior wood trim of the cottages is to receive two coats of white lead and oil paint, while the interior wood trim is to be given a coat of water stain, one coat of white shellac, and finished with one coat of interior varnish.

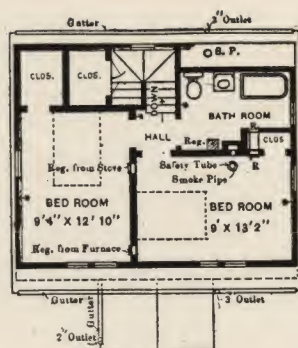


Front Elevation.—Scale,  $\frac{1}{8}$  In. to the Foot.

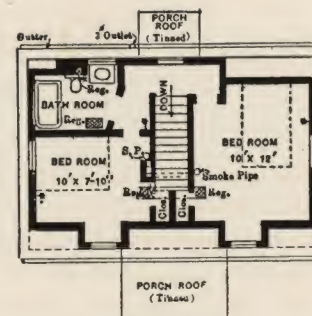


First Floor.  
Scale, 1-16 Inch to the Foot.  
25 Feet Wide.

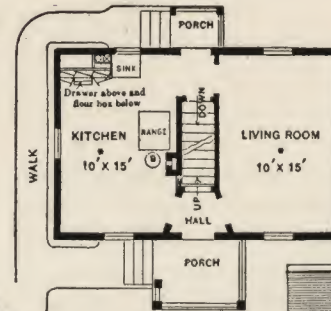
COTTAGE COSTING \$1500.



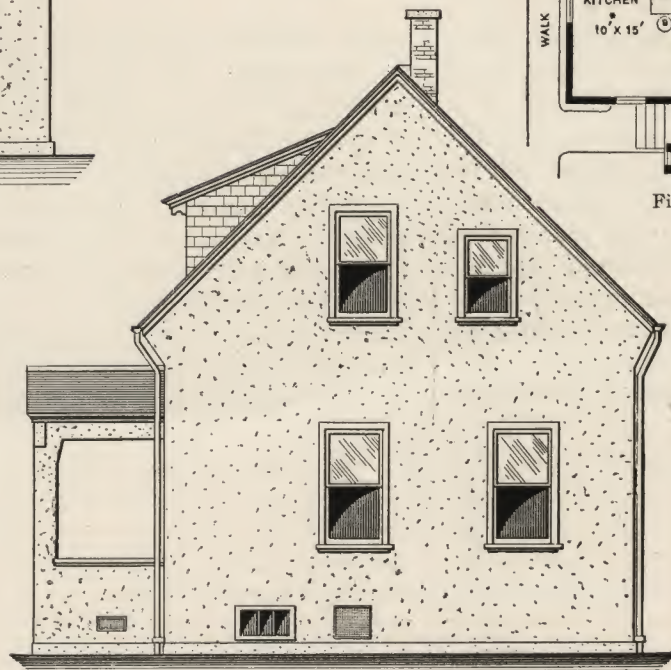
Second Floor.  
Scale, 1-16 Inch to the Foot.



Second Floor.



First Floor.



Side (Right) Elevation.—Scale,  $\frac{1}{8}$  In. to the Foot.

## DESIGN No. 1

COTTAGE COSTING \$1250.

Scale, 1-16 Inch to the Foot.  
25 Feet Wide.

ARCHITECT,  
ESTHER M. BYERS,  
ROCHESTER, N. Y.



Front Elevation.—Scale,  $\frac{1}{8}$  Inch to the Foot.



## DESIGN No. 2

\$2000

AN excellent example illustrative of the application of reinforced concrete, in the erection of inexpensive houses of a thoroughly sanitary type and altogether a model in its way, is the two-story, five-room cottage, recently completed in Brentwood, Md., the general arrangement and appearance of which are shown herewith. It was built along the lines of the model concrete cottage awarded the first gold medal, in a competition for sanitary inexpensive workmen's homes, held at a recent International Congress on the Prevention of Tuberculosis, the architect being Milton Dana Morrill, of Washington, D. C., who has devoted much time and attention to the subject of the sanitary house. Upon carefully considering the problem of housing in its various aspects, it was found that a box house requires the least wall area, and was by far the most economical form which could be constructed enclosing a given space. The box form is also the most rigid and substantial, and the cottage shown here is the first of its type to be built with a view to demonstrating the practicability of the ideas advanced by the architect.

According to his specifications the walls are 8 in. in thickness and the floors are 4½-in. slabs reinforced, the molds being made of wood in standard sections. One carload of Portland cement was sufficient for the construction. Every room has windows on at least two sides, thus giving ample light and ventilation. The windows are of the casement type swinging out with no trim, but with a stencil border, the sash being hinged to simple metal strips which form a weather-tight joint.

While the box-shaped house is not perhaps as attractive as other styles, much can be done to enhance its beauty, by the judicious application of the law of common sense, and by making use of flowers and vines, as shown in the window boxes, that give both color and pleasure in their effects. The concrete flower boxes now contain small cedar trees gathered near the site, and the vines are the wild honeysuckle, which grows in fragrant tangles all about the section of country in which the house is located.

The roof is of open cellular construction. At the front of the house there is a porch with balcony above; and also a side and rear porch as shown

on the plans. The living and dining rooms, as well as the front bedroom on the second floor, are each 11 x 18 ft. in size; the main stairs rise from the center of the building, and are readily accessible from all the rooms on both floors.

The bath room is at the rear of the house, and the water supply is furnished from a concrete tank built in the top of the bath room, and filled from a small force pump at the kitchen sink. A corner in the kitchen is shown in one of the pictures upon the second page. All fixtures, such as kitchen sink, wash tubs, lavatory and bath tub, are cast in concrete, giving a very smooth cement finish. Under the wash tub at the left of the sink is an enclosure for the garbage pail. This enclosure has a ventilated screen door that can be opened from the outside of the building.

A small wooden strip is laid in the border of each floor, so that rugs and carpets can be tacked in place if desired. All corners are covered and all fixtures are bracketed from the wall, leaving no places for the shelter of dust, vermin, or insects.

To thoroughly clean a room, a hose is used, the cement floors being graded to plugged tile spouts discharging on the lawn.

The kitchen range is built so that the waste heat warms the house through circulation of hot water; in the summer an inside firebox cuts off the heating system.

Mr. Morrill points out that it is difficult to base an estimate of cost on this first house, since the molds and the superintendent's time have been charged against it, but it is safe to assume that these houses can be built in groups at between \$200 and \$300 per room. In the construction of concrete houses he has found that in some light work the expense for lumber and carpentry labor for molds was three-fourths the total cost. He searched the market in this connection for a standard sectional steel mold equipment, and while several good types were found, none exactly suited his requirements. The simple equipment used was the result of many months' experimental work, and should do much to reduce the cost of concrete construction.

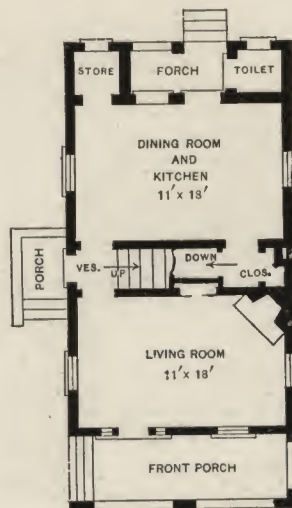
#### DESIGN No. 2—Continued

The mold plates are pressed from No. 12 gauge sheet steel into flanged sections 24 in. square. Upon the completion of the footing course, the plates are locked to the cement spacing blocks, furnishing a trough into which the mixture is poured. The cement spacing blocks are left in the wall, and the plates are locked to these by a key, which is afterward removed. Wherever four corners join, a cuff engages, wedging the plates together and drawing them to a perfect alignment on the inside. The plates are two tiers in height, each tier being clamped together in series and attached by a hinged rod, so that the lower tier is unlocked and swung into its new position on top and then locked. The entire equipment for house construction has only ten different parts and

can be used indefinitely, so that the cost per house is not great. Wood fillers are arranged to take up odd dimensions.

A group of houses like the illustration just cited has recently been completed at Virginia Highlands, a few miles out of Washington City, and while the majority are of cement, a few are of brick. Good cinder concrete gives ample strength for the walls, use being made of the waste from a manufacturing plant nearby. Great public interest is manifested in these model houses, as they strikingly demonstrate the possibilities of reinforced concrete in the construction of inexpensive homes.





First Floor.



Second Floor.

ARCHITECT:  
MILTON DANA MORRILL,  
[WASHINGTON, D. C.]



Perspective View as Reproduced from a Photograph.



An Inexpensive Home of Reinforced Concrete.—The Front Porch Showing manner in which the Concrete Surfaces may be Decorated.



Interior View Showing Sanitary Feature, with Opening under Wash Tub from which Receptacles may be Removed from the Outside,



Detail of the Side Entrance Concrete Porch and Steps.



## DESIGN No. 3

\$4000

AN interesting example of the use of hollow concrete blocks in the construction of dwellings is found in the attractive residence which is described as follows: The picture, a direct reproduction from a photograph, shows the appearance of the completed building, and brings out in strong relief, the effects produced by a combination of the materials used in the exterior construction. The house is beautifully located on Sandusky Bay, standing back from the water a distance of about 50 yards, the front walk leading directly down to the landing and boat house.

The foundations of the building are solid concrete from the footings to the grade line, above which the outside walls to the second floor joist are constructed of hollow concrete blocks, 8 in. in thickness, 32 in. in length, and rock faced. They were made on a Palmer machine from "Medusa" cement, with 1 per cent "Medusa" waterproof compound, and five parts limestone screenings. The blocks were laid up with cement lime mortar and tuck pointed. The second story or end gables, as the roof slopes down at the front and rear to the first story, are "rough cast" applied directly to metal lath. The roof is covered with No. 1 black slate. The piers and columns of the front porch are concrete. The inside plastering was applied directly to the surface of the blocks, no furring being required.

The timber employed in the erection of the building was hemlock, the first and second joist being 2 x 10 in.; the attic joist 2 x 8 in., and the rafters

2 x 4 in., all placed 16 in. on centers. Under the partitions of the first and second floors the joist are doubled. The studding is 2 x 4 in., placed 16 in. on centers, and is doubled at all corners and door and window openings. The porch joist are 2 x 8 in., the ceiling joist 2 x 4 in., and the porch rafters 2 x 4 in., all placed 16 in. on centers. The floors are double, the lower floor of white pine, while the finish floor is of Georgia pine blind nailed; the attic floor is of white pine.

All interior trim and wood work on first and second floors is of selected white pine. The main stairs are of quarter sawed oak with 1 3/8-in. treads, 1 1/2-in. stringers, and 7/8-in. risers, while the newels are 6 x 6 in. The rail is 3 x 4 in., and the turned balusters 1 3/4 in. The seat on the stairway landing is of selected white pine, also the trim of the window on the landing between the first and second floors. The front doors and windows of the living room are glazed with polished American plate glass, while for the balance of the sash and doors, double thick American glass is used.

The residence here shown was erected at Bay Bridge, Ohio, for S. B. Newberry, vice-president of the Sandusky Portland Cement Company, and the work was done by the company's carpenter and mason in accordance with plans prepared by William M. Kingsley, architect, 1010 Rockefeller Building, Cleveland, Ohio. The total cost of the work, including excavation, concrete cellar, plumbing, bathroom fixtures, steam radiators, &c., was about \$4000.



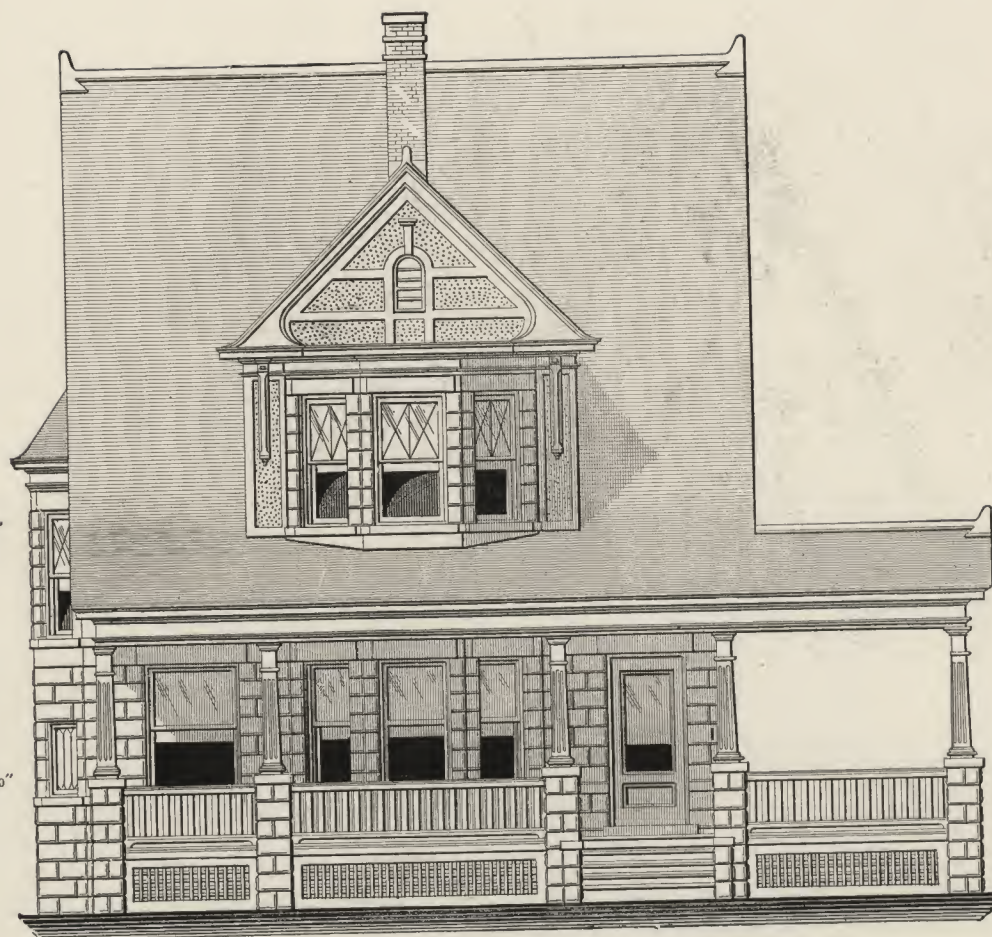
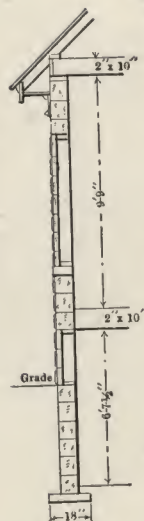
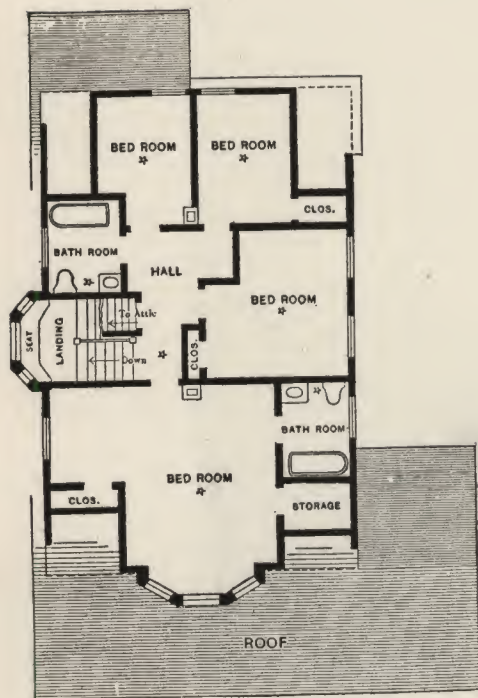




Residence of Hollow Concrete Blocks Erected for Mr. Spencer B. Newberry at Bay Bridge, Ohio.  
WILLIAM M. KINGSLEY, ARCHITECT.

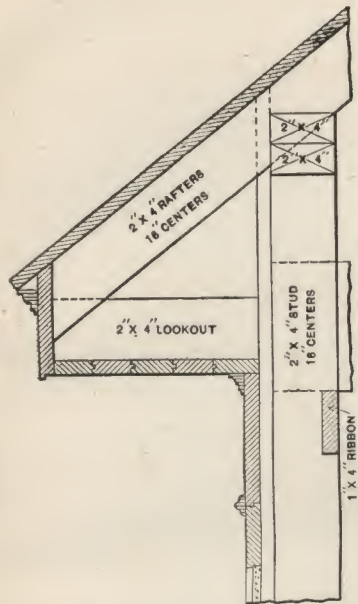


# DESIGN No. 3

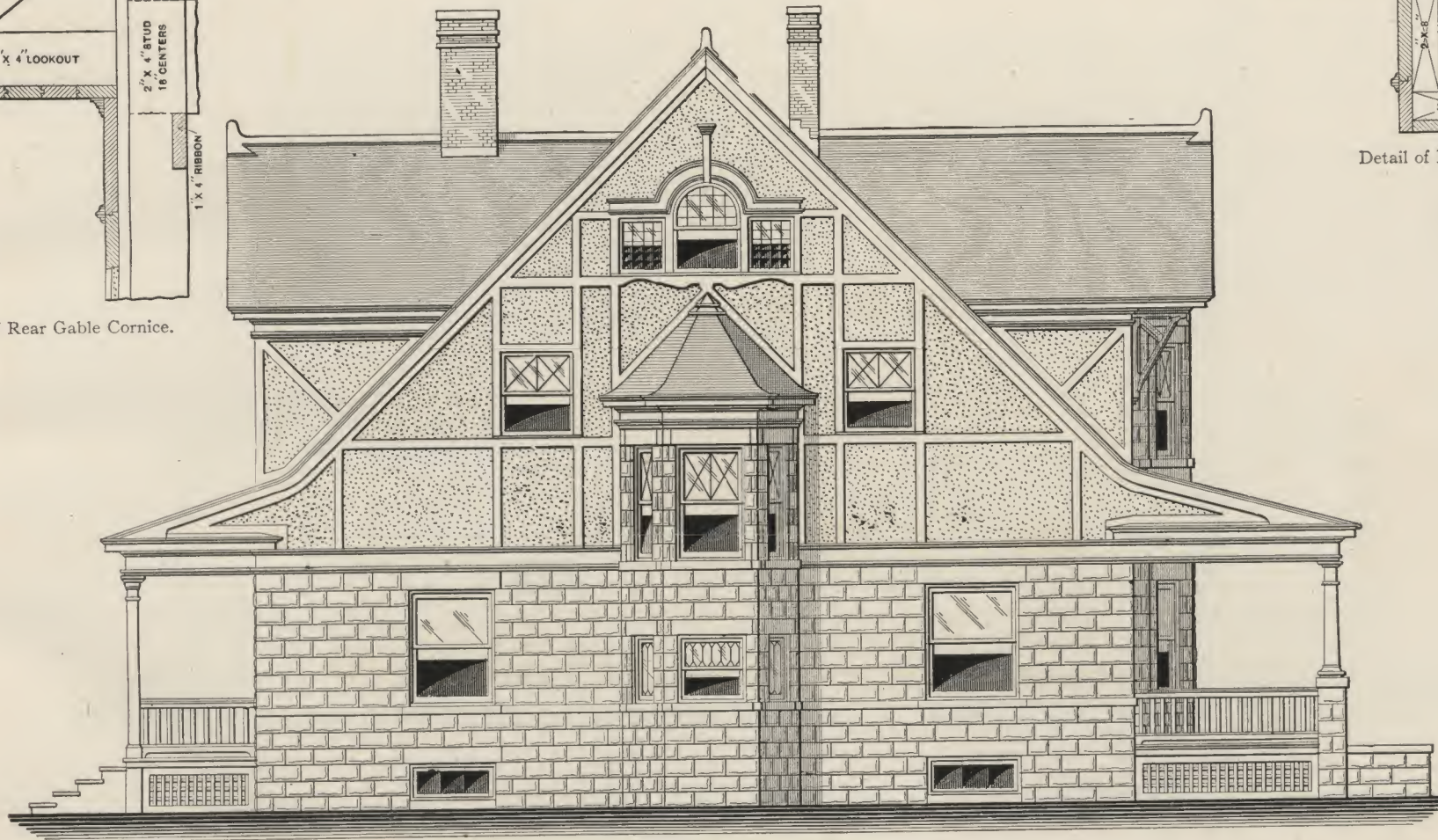




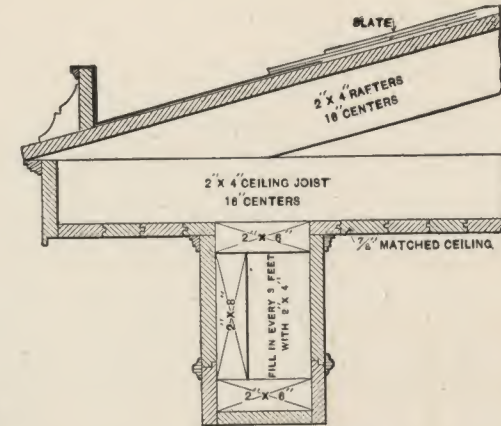
# DESIGN No. 3



Detail of Rear Gable Cornice.

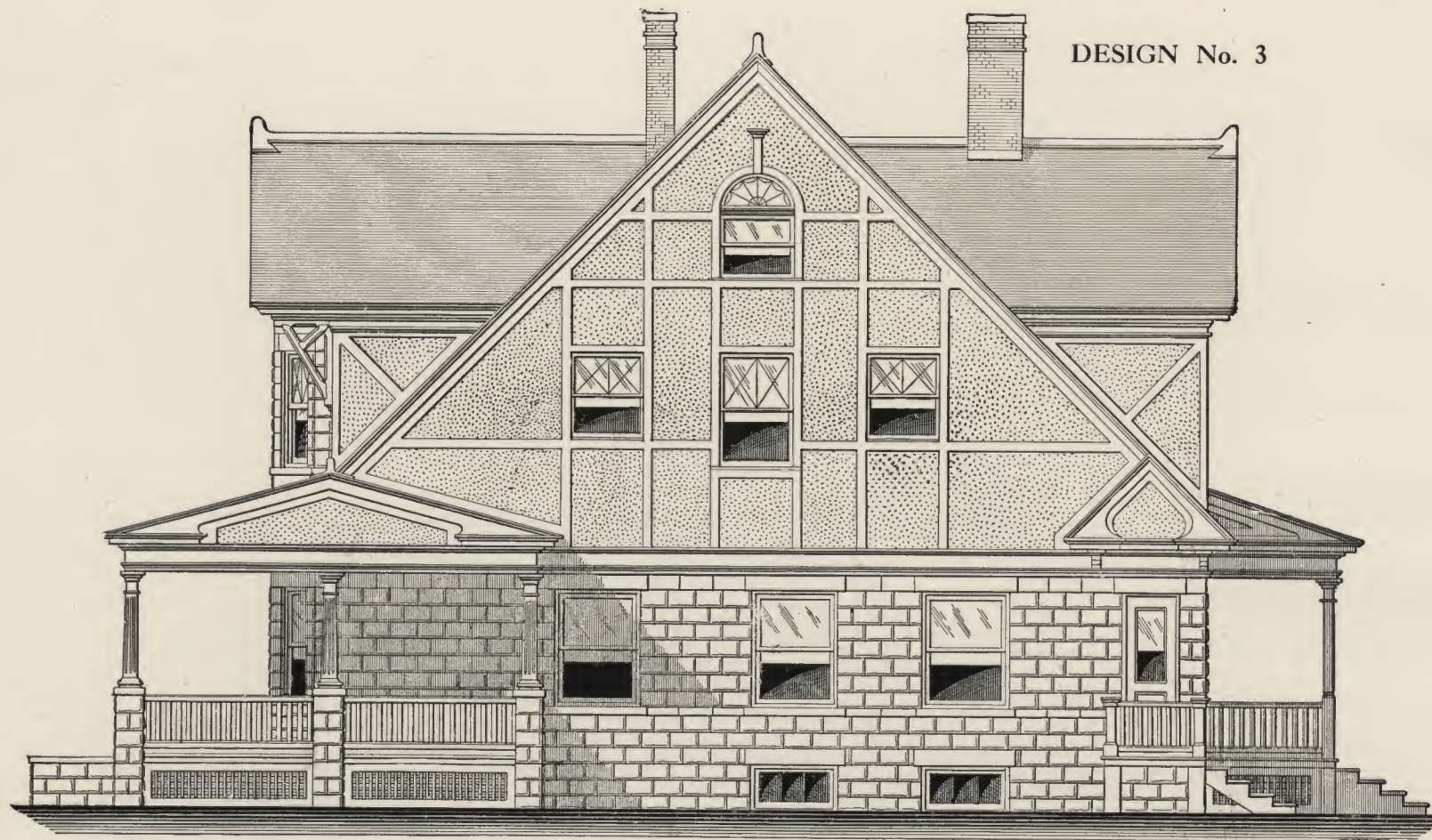


Side (Left) Elevation.—Scale,  $\frac{1}{8}$  Inch to the Foot.



Detail of Porch Cornice.





DESIGN No. 3

Side Elevation (Right).—Scale,  $\frac{1}{8}$  Inch to the Foot.



# DESIGN No. 4

\$5200

THE rapid and recent multiplication of concrete and cement block houses has been the means of developing a number of unique features, of arrangement and construction, and in the dwelling which we describe a form of concrete wall somewhat out of the ordinary has been successfully introduced. The house occupies a plot of ground measuring 100 x 175 ft.; has a frontage of 34 ft. 4 in. and a depth of 28 ft. 10 in., sitting back 30 ft. from the front line. The appearance of the finished structure is clearly indicated in the exterior view on one of the half-tone plates; the two other plates represent interiors, one the staircase hall, as seen from the library, the other a view of the dining room. The large half-tone shows the house during its early construction, the cement blocks or slabs piled in the foreground. The small half-tone is a section of the parlor. The exterior of the building is smooth finished, with panel effect, but for the purpose of rendering the elevations here presented more picturesque the engravings have been prepared as shown.

The first-floor construction is of solid concrete, while the second-story walls are double, formed to two sets of slabs, with an intervening air space. A cement porch 9 ft. wide, extends across the entire building, the portion in front of the doorway being roofed over. Cement balustrades are placed at each end of the porch, as well as on its roof, all clearly shown in the half-tone supplemental plate and in the elevations. The absence of wood in the construction of the house is notable. It is used only for the floor joist, flooring, studding, stairways and rafters.

With the exception of the cement, the materials used throughout were local sand and gravel, dug from the cellar, where they were found in all grades of fineness, from coarse gravel to clean silica sand. The molds for the various cement blocks, slabs, columns and shapes were made on the ground. The cement was the "Lehigh" brand, and the total amount required was 195 bbl. No broken stone was employed, clean gravel taken from the cellar was substituted.

The footings under the main walls are 18 in. wide by 10 in. deep, 1 part cement, 3 parts sand and 5 parts clean gravel. Under the cement columns and supports in the center of the building are footings of the same composition 18 in. square and 12 in. deep. The foundation walls are built of hollow blocks 12 x 12 x 18 in. with a core 5 x 14 in., and are composed of a mixture of 1

part cement to 5 parts mixed sand and gravel, laid in mortar made up of one-half cement and one-half lime. The center ends of the floor joist are supported on sectional beams resting on the tops of these posts, the beams being of 1 to 5 cement reinforced with  $\frac{3}{8}$ -in. round rods, five in each piece. The chimneys with outside dimensions of 18 x 30 in., and built of slabs 4 in. thick and 8 in. high, running the full breadth, have terra cotta flue linings and are topped out in the usual manner. They followed along with the general construction work, and are supported on footings 8 in. deeper than the main wall.

The first story walls are built up of concrete columns 9 ft. long and set on the foundations 3 ft. apart, center to center (the house and rooms all being multiples of 3 ft. in their general dimensions) between which concrete slabs are set, except in the case of doorways and windows. These concrete columns are one of the unique features in the construction of the house. The material used was mixed 1 to 5, and they were molded with the complete inside and outside finish. They measure  $6\frac{1}{2}$  x 8 in. and are 9 ft. long, reinforced with  $\frac{1}{2}$  in. rods. The outside faces of all the columns are plain, the inside faces conforming with the designs of the respective rooms; in the parlor and dining room they are fluted, while in the library and hall they have beaded corners. The faces of the kitchen columns are 6 in. wide with centers 7 in. wide, and are plain both inside and outside, with grooves formed to admit the exterior slabs and interior panels. The columns next to the windows are recessed to receive  $\frac{7}{8}$  x 5 in. wooden window stiles, held in position by lead expansion bolts. Near the top of the stiles pockets are inserted to receive Pullman spring sash balances, which obviate the use of runways for sash weights. Higher up are two pockets to receive the ends of the brackets supporting the heads, shown in the details presented herewith.

The doorways are formed by these columns in the same manner, except that no recesses for balances are required. The columns are secured at the tops with  $\frac{1}{2}$  x 1 in. tie rods fastened into cast iron plates which are molded into the heads of the columns. The spaces between the columns, except where the doors and windows occur, are filled with slabs, measuring  $2 \times 11\frac{3}{4} \times 29\frac{3}{4}$  in., reinforced with five strips of band iron, the material being mixed 3 to 1. In the window openings two of these slabs were set at the bottom. The lintels



#### DESIGN No. 4—Continued

are  $6 \times 10 \times 35\frac{1}{2}$  in., slabs of the same mixture of material with  $\frac{3}{8}$ -in. round and flat band iron for reinforcement. They connect the columns at the top, forming the joint at the center of each column and also a recess over the same to receive the second-story joist. Slabs,  $3 \times 8 \times 35\frac{1}{2}$  in., of one to three mixture reinforced with expanded metal, are laid over the top of the lintels, and form the base for the second-story slabs. The exterior faces of these slabs have molded on them an O. G. molding, to make a finish or parting between the first and second stories of the building.

The interior portions between the cement columns of the first floor, except where windows or doorways occur, are filled as follows: the baseboard section,  $3 \times 9 \times 39\frac{3}{4}$  in. of 1 to 3 concrete reinforced with expanded metal and panels, which were specially designed to accord with the finish of the different rooms. These panels extend up to the cornice and vary from 2 in. up to  $3\frac{1}{2}$  in. in thickness, and are of concrete of the same mixture as the baseboard sections, but reinforced with  $\frac{1}{4}$ -in. rods. An air space between the outer and interior portions in these sections of the building varies from 3 to 5 in., according to the location. The cornice slabs are 6 in. deep,  $2\frac{1}{2}$  in. at the bottom and  $5\frac{1}{2}$  in. wide at the top. They have a molded face to conform to the inside finish and are reinforced with  $\frac{1}{4}$ -in. round rods. This interior work was all pointed up even and finished to a smooth surface, effacing all joints, plaster of Paris and lime being used, put on with a brush, and troweled smooth. The window openings were finished with the same baseboard slabs, and a section of panel of sufficient size and to come to the same height as the outside walls. On these two walls the window sills were set. These were of concrete, proportions 1 to 3, reinforced with three  $\frac{3}{8}$ -in. rods, being  $8\frac{1}{2} \times 6 \times 4$  in., and  $29\frac{3}{4}$  in. long. The window and door heads were set with cast iron brackets as shown in the details, with special width slabs for the outside opening, and narrow slabs and the cornice slabs for the interiors. The heads and sills carry the interior finish molded as a part of them, and the absence of wood trim, except stiles, heads and stops, is to be noted.

The first story partitions are constructed the same as the outside walls. The columns, however, are  $6\frac{1}{2}$  in. square, and the spaces are filled with baseboard slabs and panels, the different sides of the columns, baseboard slabs and panels being molded with faces, conforming with the finish of the respective rooms and halls. The only section of the first story partitions not finished as above described is that section in the parlor, where the mantel is located, and which is only partially filled with the regular panel, the remainder of the

space being occupied by the mantel, made up of reinforced members molded to size and finish.

The partition columns, previously mentioned, are supported on the concrete headers (as shown in the accompanying details), which are in turn supported by the columns and footings in the cellar, making the partitions of this floor entirely independent of the floor joist or the floors. The doorway between the parlor and reception hall has a door of three thicknesses of  $\frac{1}{8}$ -in. asbestos and cement lumber, made by the Keasby-Mattison Company, Ambler, Pa., and measuring 5 ft. 6 in. and 7 ft.; it slides on adjustable brass rollers on a special track, into a space specially provided between the partitions.

The second story walls are made up of concrete blocks  $2 \times 8 \times 18$  in. and  $4 \times 8 \times 18$  in., made in proportions of 1 to 3, tied together with a special block so formed as to avoid any direct section of cement from outside to inside, and practically making two walls with an air space between them. The window openings were left in the block walls, and the frames made of concrete, the sill being reinforced with three  $\frac{3}{8}$ -in. rods, the sides being made up of four members with molded faces with a recess on one side for wooden window stile and lead expansion bolts with which to fasten them to the cement. The window heads are of reinforced concrete, and are set on top of the side frame pieces, the heads having recesses for Pullman sash balances. These frame pieces are all molded complete, inside and outside, with no wood trim. The walls were all pointed smooth on the inside and finished in panels with U. S. fiber plaster board, the cornice members being molded to shape and size and reinforced with expanded metal. The partitions in the second story are made  $2 \times 4$  in. hemlock studding on 18-in. centers, finished in fiber plaster board in panels; no lath and plaster being used in any portion of the house.

With the exception of the space devoted to the vegetables, the cellar is cement floored, and extends under the entire house. It is divided into compartments comprising laundry, cellar kitchen, vegetable cellar, etc., separated by cement partitions readily formed with the aid of the columns supporting the partitions of the upper floor.

The first story joist are  $3 \times 10$  in. hemlock, laid 18 in. on centers. The ends enter the outside foundation walls in spaces made in the blocks. The second-floor joist are  $4 \times 10$  in. planed long leaf Georgia pine on 3-ft. centers chamfered on the lower edges. These joist are bored on the under side near the ends, and set down over dowels in cast iron plates, secured in the heads of the columns in the outer walls, as shown in the details.



#### DESIGN No. 4—Continued

The third story joist are 2 x 8 in. hemlock, laid 18 in. between centers. These are planed, stained and finished in natural wood, and they extend out over the walls of the house and support the horizontal cornice members, roof rafters, and concrete gutters. They are nailed to a 2 x 6 in. hemlock plate, bolted to the cement wall. The extended portions carry reinforced cement blocks, held between the girders, one end resting on the outer wall of the house. They are also secured to the joist themselves by wrought iron brackets, and carry the reinforced concrete gutter extending around the entire house. Galvanized iron rain conductors on the four sides of the house are attached to the gutter.

The rafters are hemlock, 2 x 6 in., with 2 x 8 in. king rafters, while the rafters for the dormer windows are 2 x 4 in. yellow pine. The rafters are covered with  $\frac{7}{8}$ -in. yellow pine boards, these in turn covered with slater's felt and the best quality Chapman slate, the flashings and gutters being of 16-oz. copper.

The floors in the first and second stories are double. On the first floor a  $\frac{7}{8}$ -in. yellow pine floor was laid on the joist; on the top of this a  $\frac{3}{8}$ -in. birch floor was laid, which was scraped, waxed and polished. The rough floor of the second story is also of  $\frac{7}{8}$ -in. yellow pine, covered with  $\frac{3}{4}$ -in. finishing floor of the same material, planed and varnished. In the third story the ordinary  $\frac{7}{8}$ -in. yellow pine flooring is used.

The first floor ceilings are formed of molded concrete plates made in 1 to 3 proportions, reinforced with rods and expanded metal, and are in different styles, to conform with the finish of the rooms. The plates are finished with concrete moldings reinforced with  $\frac{3}{8}$ -in. rods, and are held in place by steel brackets screwed to the joist. The second story ceilings are of asbestos fiber pulp board, nailed to the joist and finished in panels with U. S. fiber plaster board.

The main stairway balustrade is of molded concrete, 1 to 3, in sections, reinforced with rods, and held securely with expansion bolts. The stairway is on the usual hemlock horses, secured to the cement blocks by means of expansion bolts; the stairs are of selected yellow pine, the tread being  $1\frac{1}{4}$  in. in thickness. The second story stairway is of the usual type, the horses also being held to the concrete walls by means of heavy expansion bolts; the risers and treads are of yellow pine.

The woodwork, which comprises in the main the doors and window sashes, is scraped, stained and waxed, to suit the general finish of the respective rooms. The parlor floor is finished in its natural color. The

library and hall floors are stained a dark mahogany, while the dining room floor is finished in Flemish oak. The first floor walls are finished with alabastine, the parlor in two shades of old rose with ivory white (oil paint) for the columns, cornice, mantel, baseboards, joist, &c. The hall and library walls are finished in three shades of moss green, trimmed with dark mahogany brown (oil paint); the dining room in three shades, red and cream yellow with black trim (dead flat oil paint).

The ornamental panel scheme of these rooms is best to be observed by referring to the accompanying half-tone plates. The second story walls and ceiling are finished with Roman flat oil wall paint, trimmed with regular oil paint. The bathroom is finished in white enamel, with a sea-green frieze ceiling.

All the exterior blocks, slabs, columns, window sills, heads, &c., are finished with "Medusa" water proofing compound, preserving the natural cement finish.

The windows throughout the house, except in the dormers and the small Dutch windows at each side of the doorway, are of the usual two-sash type, and have American double thick window glass, 24 x 24 in., on the first floor and 20 x 24 in. on the second floor. The dormer windows, front and back, have three sashes, 24 x 24 in., set with small panes of glass. The front door is oak, finished after the Dutch type, the upper section carrying small windows in heavy mullions. On each side of the door are narrow Dutch windows to conform with those in the upper portion of the doorway.

Porches are located at the front and back of the house. The walls of the front porch are solid concrete, (in proportions 1—3—5) which is used up to the coping, the latter being of a 1 to 3 mixture. The floor is of the regulation concrete walk mixture and laid in the same manner. It has a pitch of  $\frac{1}{2}$  in. in  $7\frac{1}{2}$  ft. Flower beds are located on both sides of the covered porch. The balusters at the ends of the porch and on the porch roof are all of molded cement, 1 to 3, while the porch steps are of cement of the usual composition. The porch columns of the covered portion, which measures 9 x 9 ft., are of reinforced concrete, and the roof is made of reinforced concrete slabs laid in cement in flanges of T iron, the whole covered with a layer of 1 to 1 cement. The back porch is inclosed, and is 12 x 12 ft. in size, and has a solid concrete wall and floor, molded cement posts, panels and lintels, all reinforced, with recesses for window stiles and heads. The roof is made of concrete slabs, laid on reinforced cement rafters.

The house is heated with a warm air system and return flues. The



#### DESIGN No. 4—Continued

furnace is of a built-up square type, with sheet metal drum, the firebox being 16 x 22 in., fitted with a Mershon patent shaking grate. The furnace foundations are of concrete, and the firebox is lined with firebrick. Fresh air is supplied from one of the east cellar windows, while return flues connect from the library and hall, so that the air can be recirculated if desired.

In one corner of the library and intended for service in moderate weather is an open fire-place 7 ft. high, 24 in. wide, built up of molded cement slabs reinforced with expanded metal and lined with fire brick.

Water is supplied to the house through a 3-in. wrought iron pipe from a driven well 63 ft. deep, located about 6 ft. from the house. The pipe extends through a conduit, so as to be readily accessible for any needed repairs, and enters the house at the cellar floor. The general supply is pumped by hand against air pressure, forcing the water into a tank, from which the various parts of the house are supplied. For drinking purposes, a "pitcher pump," having a 1/2-in. supply pipe extending 30 ft. into the well, is provided, insuring cold water at any time.

Open plumbing is used throughout the house. In the bathroom there is a Colonial white enameled tub 5 ft. long, with nickel plated mixing spigots; a Cyclo closet with low down tank, and a one-piece white enameled lavatory with nickel plated bibbs, all manufactured by the Standard Sanitary Mfg. Company. All water and gas piping is galvanized iron. The soil pipe is the usual cast iron pipe, and is connected with a 6-in. terra cotta pipe just outside of the cellar wall; this pipe extends to the cesspool made of wedge-shaped concrete blocks laid loose, forming an arched top, with vent, and located 100 ft. from the house. The vent from the closet drain goes up through the attic, and just under the rafters enters the chimney, in which a special flue for this purpose was provided.

In the kitchen there is a Novelty range, on a reinforced concrete slab, a 50-gal. galvanized iron boiler connected to the water back supplying hot water. The sink is of Alberene stone, and is 24 x 40 in. with high back. In the laundry and the cellar there are two Alberene washtrays with brass fittings, supplied with both hot and cold water.

A dumbwaiter 18 x 20 in. extends from the cellar to the second floor, through the kitchen, and having an outlet into the hall.

The hardware throughout the house is of the antique bronze sand finish, and is of the standard Corbin & Sargent design.

Cement walks, 4 ft. wide, of the regulation type are laid on the two sides of the house which face the streets, while a walk 4 x 24 ft. connects the porch with the walk. At one side of the house an outside cellarway 3 ft. wide and 12 ft. long is also provided. This has concrete walls and steps and is covered for protection from the weather. As we have already stated, many unique features of cement construction have been employed in the building of this house, and as it has been completed and occupied for several years, the test of both summer and winter weather has been carefully observed, and it is said by the occupants that the house has been perfectly dry in all kinds of weather, even more so than the neighboring frame house, which was occupied by the same people during the building of the cement house. There was no difficulty in heating during the winter, and any desired temperature was easily maintained.

This dwelling, located at Grenloch, N. J., was designed by W. O. Steele, of Irvington, N. J., and was built for \$5,200.00 complete, including concrete walks, a driven well for drinking water, a concrete cess-pool, and a pneumatic water distribution system.



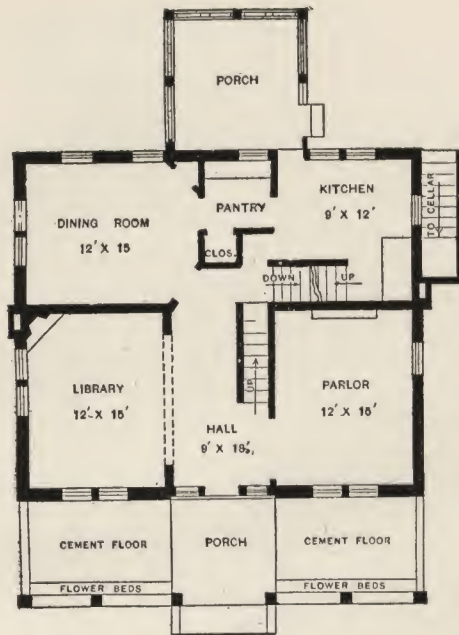


Two-Story House of Cement Blocks, Erected for Mr. W. O. Steele, at Grenloch, N. J.  
W. O. STEELE, ARCHITECT.



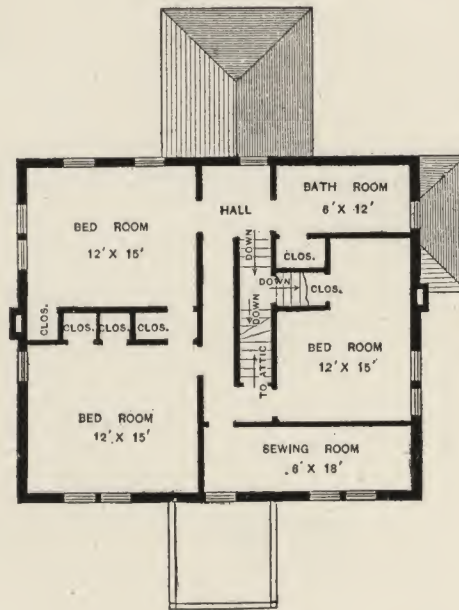


# DESIGN No. 4

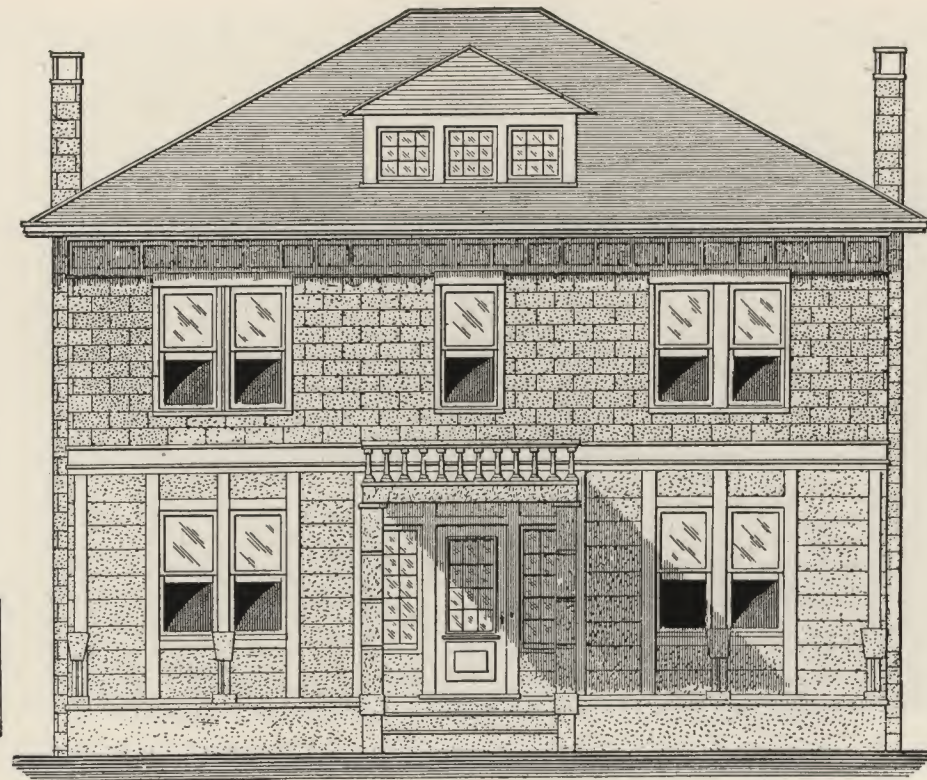


First Floor.

Floor Plans.—Scale,  $\frac{1}{16}$  Inch to the Foot.



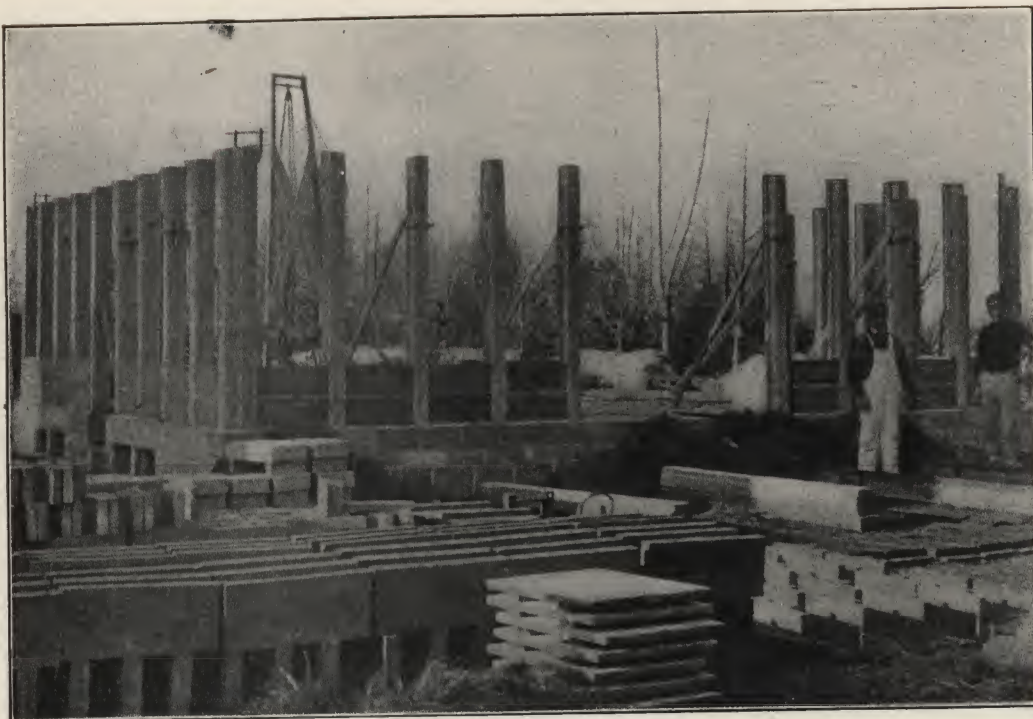
Second Floor.



Front Elevation.—Scale,  $\frac{1}{8}$  Inch to the Foot.

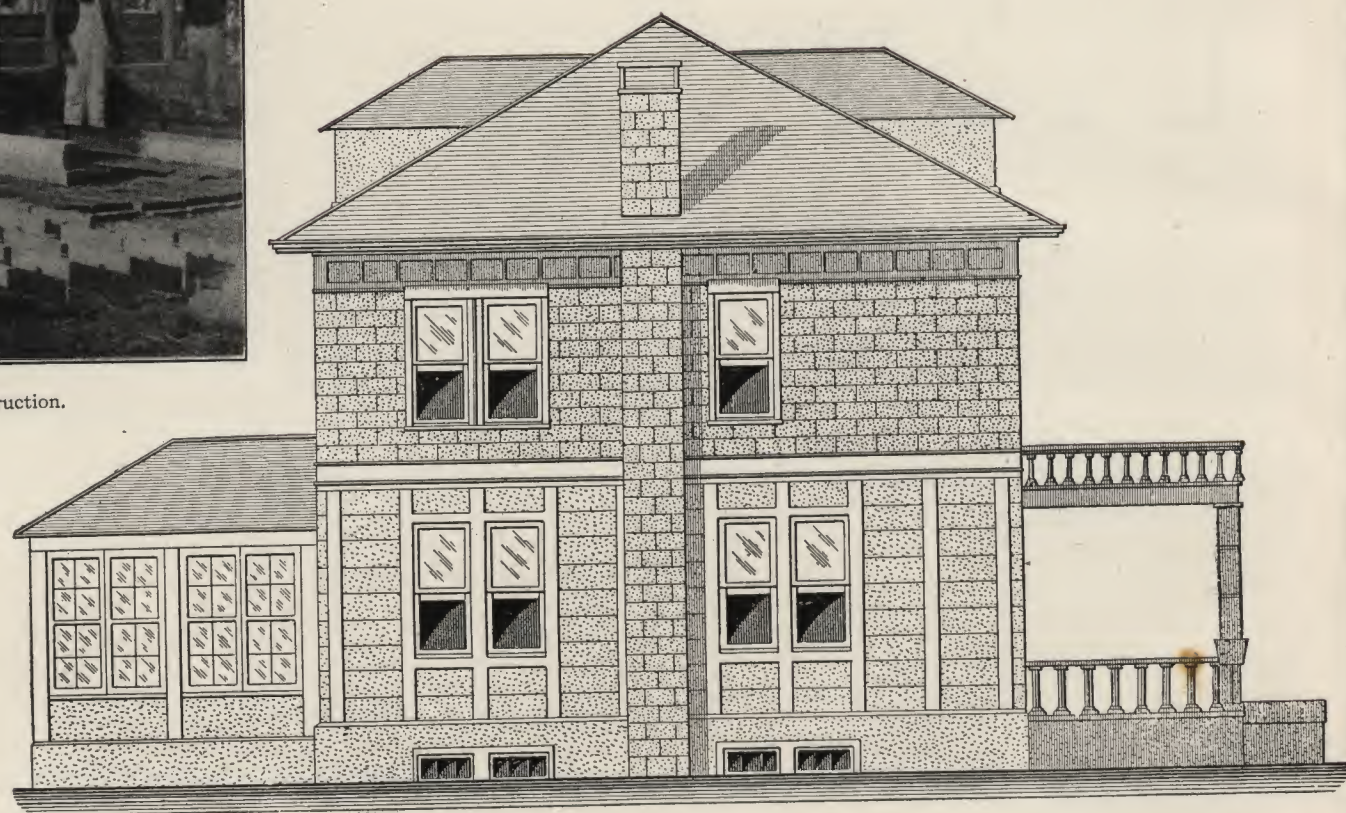
ARCHITECT,  
W. O. STEELE,  
IRVINGTON, N. J.





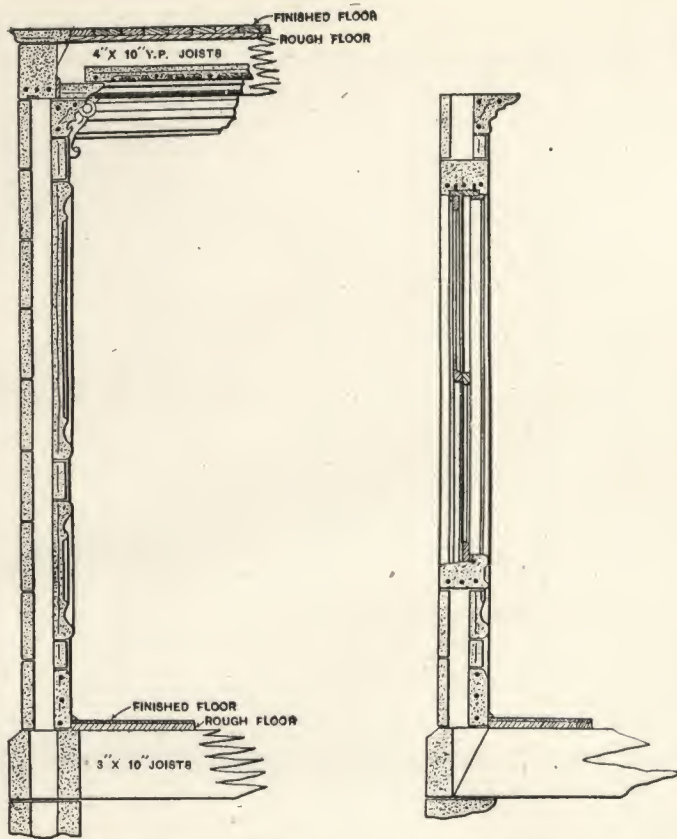
View Showing Appearance of House in its Early Stage of Construction.

DESIGN No. 4

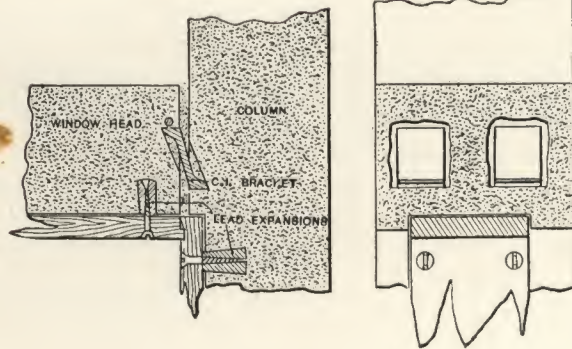


Side (Left) Elevation.—Scale,  $\frac{1}{8}$  Inch to the Foot.





Vertical Section Through Panel. Vertical Section Through Window.



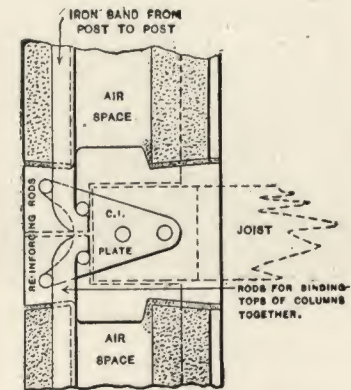
Sections Showing Method of Securing Window Heads.

## DESIGN No. 4

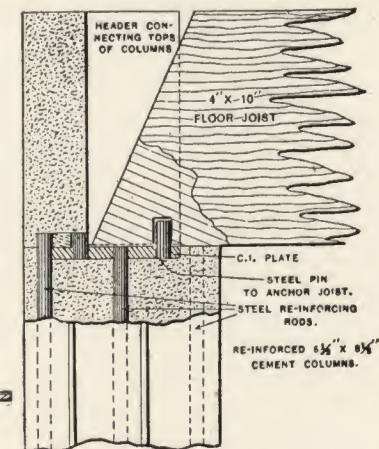


Elevation and Section of Front Door and Side Windows.—Scale,  $\frac{1}{8}$  Inch to the Foot.

Miscellaneous Constructive Details.

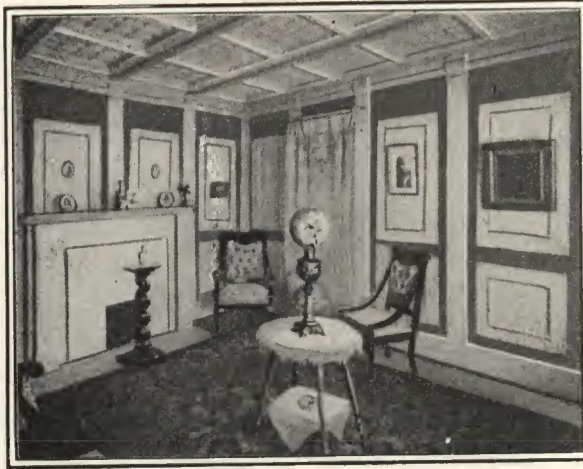


Detail Showing Method of Securing Tops of Columns and Floor Joist Together.

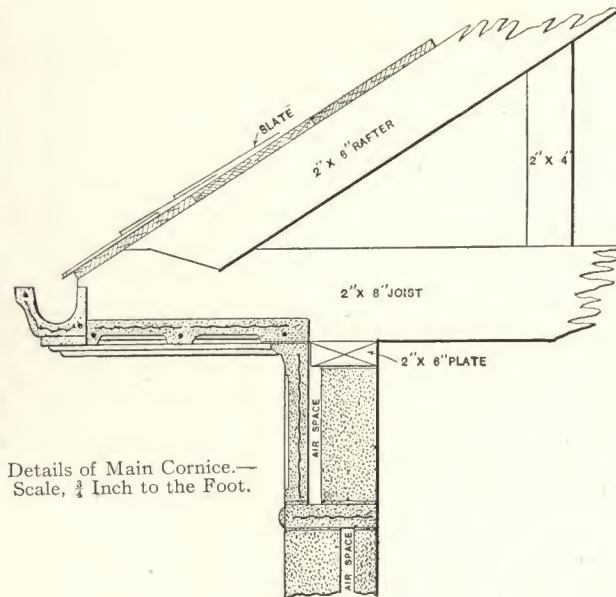


Vertical Section Through Top of Column and Floor Joist.—Scale,  $1\frac{1}{2}$  Inches to the Foot.

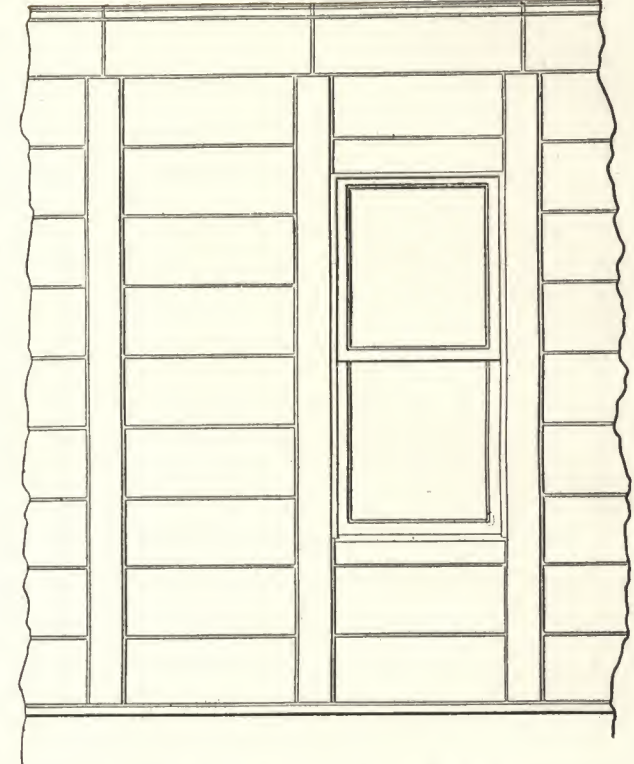




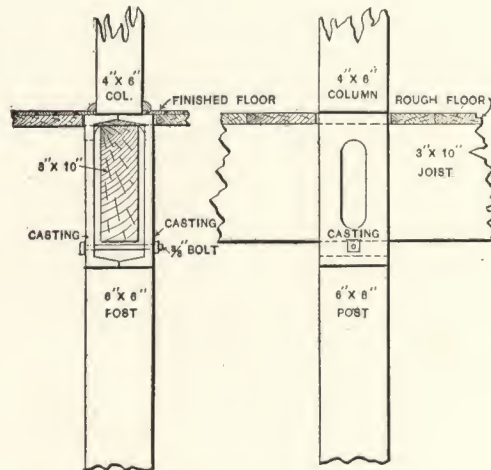
View in the Parlor.



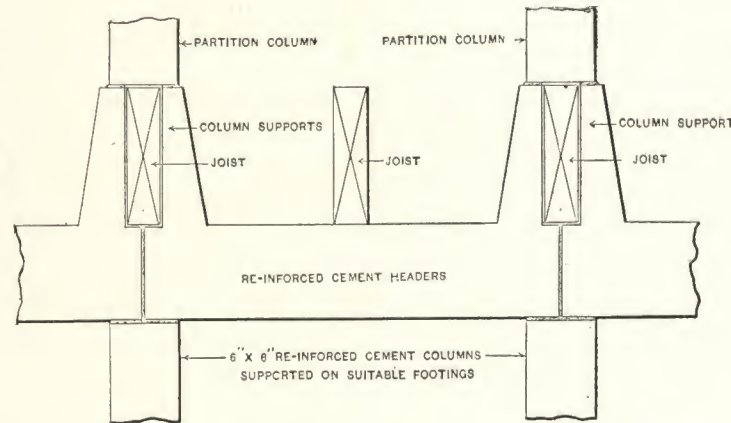
Details of Main Cornice.—  
Scale,  $\frac{1}{4}$  Inch to the Foot.



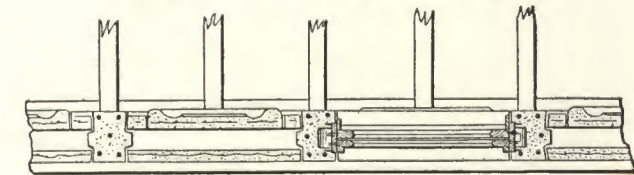
Partial Elevation, Showing Panel and Window.



Detail Showing How Floor Joist Are Carried in the Columns.—Scale,  $\frac{1}{4}$  Inch to the Foot.



Detail Showing Support for Center Partition and Ends of Floor Joist.—  
Scale,  $\frac{1}{4}$  Inch to the Foot.



Horizontal Section Through Panel and Window.

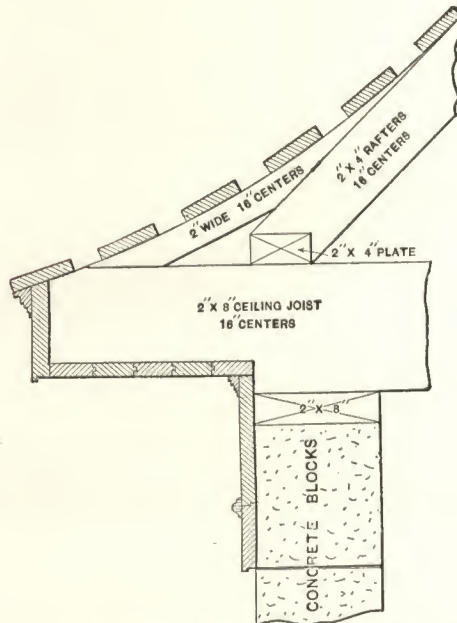
Section Through Window Sill.



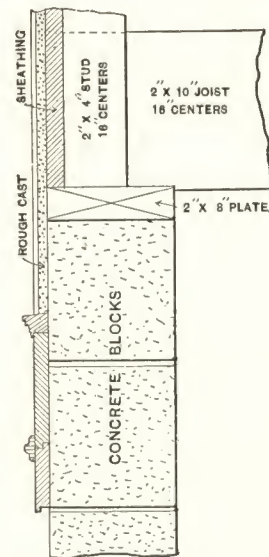
*Miscellaneous Constructive Details*



# DESIGN No. 4

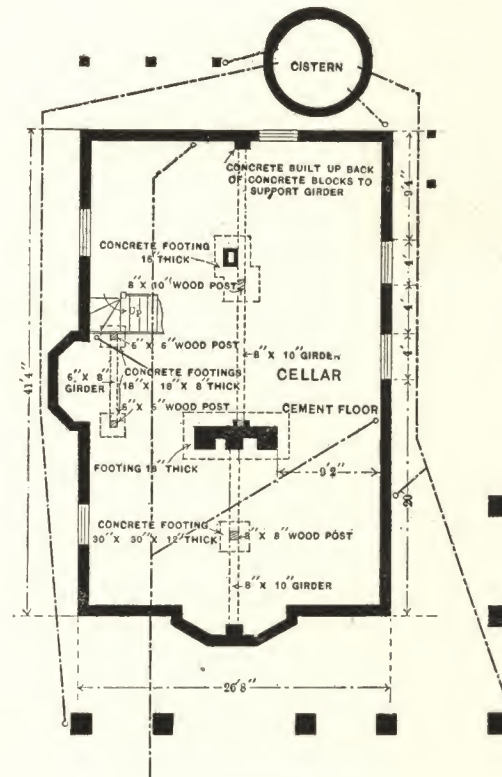


Detail of Cornice of Front Gable and Side Bay.

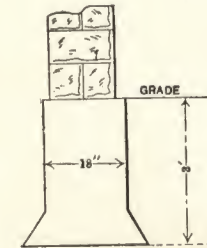


Detail of Belt Course.

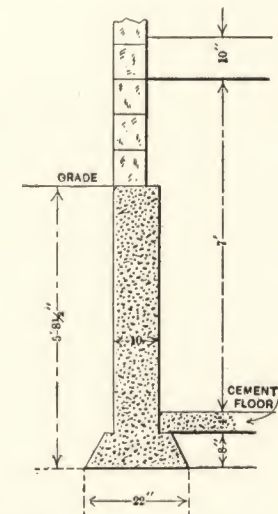
## Miscellaneous Constructive Details.



Foundation.  
Scale,  $\frac{1}{16}$  Inch to the Foot.



Section of Front Porch Piers.—Scale,  $\frac{1}{4}$  Inch to the Foot.



Section through Outside Walls.  
—Scale,  $\frac{1}{4}$  Inch to the Foot.





# DESIGN No. 5

\$6000

THE prevailing tendency toward the use of an exterior treatment of "stucco," "rough cast," "slapdash" or "pebble-dash" finish lends added interest to the design of the well-arranged dwelling which constitutes the basis of the illustrations presented upon the pages which follow. The design is well calculated to meet the requirements of the average family, and embodies a number of features which will readily command the attention of the architect and builder. The details, which are clearly presented, suggest the general style of interior treatment, all of which may, of course, be changed to suit individual tastes and requirements. The elevations, floor plans, and details of construction and finish as here shown, are direct reproductions from the architect's drawings.

The exterior finish is what is commonly termed "rough cast," or "stucco," and is made by covering the frame of the house with matched and dressed hemlock fencing, on which is laid heavy building paper. The sheathing is furred with 1 x 2-in. strips placed 12 in. apart and put on vertically. On this, in turn, are placed  $\frac{3}{8}$  x  $\frac{5}{8}$ -in. wood lath, (made by ripping common lath in two) and then wetting them thoroughly. The first coat to be applied is made of one part Portland cement, two parts medium sand, one part fine sand and one-half part flour. After this has set hard the surface is thoroughly wet and the second coat is applied with a wooden float. The second coat is made in the proportions of one part cement, one part fine sand and two parts medium sand, sufficient coloring matter being mixed with it to give a very light cream color. Before this has fully set, it is given the "rough-cast" effect with a broom. The finished surface is protected for at least two weeks with canvas curtains saturated with water. The roof is covered with 6-in. hemlock boarding nailed to each rafter and then covered with heavy building paper. On this are placed Michigan cedar shingles of a superior quality laid  $4\frac{1}{2}$  in. to the weather. All low-pitched roofs and decks are of I. C. Old-Style Scott's extra-coated 14 x 20 in. tin with flat seams. The scuttle is lined with the same quality of tin.

The front porch floor is a solid 4-in. concrete slab, finished with a top dressing of cement 1 in. thick. The arches shown on the elevations are of brick, plastered, the brick running to the bottom of the second floor joist. The

basement walls are 14 in. thick, consisting of an 8-in. outside wall of brick, then a 2-in. air space, and then another 4 in. of brick laid in cement mortar gauged with lime mortar, the inner 4-in. lining being well tied to the outside wall every fifth course, with metallic strips.

All around the inside of the basement walls are 3-in. porous drain tiles, packed in coarse gravel and draining into the catch basin. The joist in the rear portion of the basement, toilet room, laundry and rear hall, are filled in level with the top with coarse grout, consisting of five parts broken stone, three parts bank gravel, and one part Portland cement. All the other cellar floors are made by means of 3 in. of coarse grout, as stated, broken stone chips well tamped down solid, and a 1-in. coat of clear Portland cement put on true, and slightly pitched toward the catch basin, making a good, hard floor. A shallow gutter in the floor runs around the walls to drain into the catch basin.

According to the specifications of the architect, the first, second and third-story joist are 2 x 8 in., the outside studs 2 x 4 in. and the rafters 2 x 6 in., all placed 20 in. on centers. The wall plates are 2 x 4 in. for receiving the studs, and all the others are of double thickness. The valley rafters are 2 x 8 in., double thick, and were marked "H. P." on the plans. Where soil pipes pass through, the studs are 2 x 6 in.

The floor joist of the first and second stories are lined with well-dressed 6-in. boards, laid diagonally, and heavy Eureka felt. The finish floors of the living room, reception room, dining room, and den, are maple, in 16-ft. lengths. The floors of the balance of the house are  $\frac{7}{8}$  x  $2\frac{1}{4}$ -in. face steel polished perfection maple flooring.

The walls and ceilings of the rooms are lathed and plastered, all parts of the building except the attic and cellar having two-coat work, the last coat being of sand finish. All brick walls, where plastered, are furred with 1 x 2-in. strips placed 16 in. on centers and secured to the walls with 16d. nails. The kitchen on the first floor, and the bath rooms on the second floor and attic, have a wainscoting 4 ft. 6 in. high of adamant, capped with rabbetted molding  $3\frac{1}{2}$  in. wide, and a  $3\frac{1}{2}$ -in. shoe strip at the floor.

The vestibule, reception room, living room, main stairs, kitchen, china



## DESIGN No. 5—Continued

closet, den, and first story rear stair hall, are finished in cypress; the dining room has a red oak finish for dark staining, and wainscoting panels with loose moldings for future burlap or wood panels, according to preference.

The woodwork of the second floor, with the exception of the main stairs and the adamant scoring in the kitchen, is white enameled, four coats, the last coat being Patek Brothers' "H. Q." white enamel. The woodwork in the servants' room, bath room, and corridor on the third floor, the laundry, toilet, and stair hall in the basement, is painted two coats.

The dining room and den have the woodwork filled and finished with one coat of dark English oak stain, and two coats of Pratt & Lambert's No. 38 Preservative, the last coat well rubbed down with pumice-stone and oil. All cypress finish, except the den, is in natural color in three coats—the first of best shellac, and the other two of colorless varnish, each coat of shellac and varnish well sandpapered down before the next coat is applied, the last coat rubbed down with pumice-stone and oil.

The mantel and hearth in the living room are of sand-mold red brick laid up in yellow mortar, while the den mantel and hearth is of rubble-stone laid in colored mortar.

The floors in the living room, vestibule, reception room, den, dining room, and entire second floor are filled with mineral paste filler, stained to color, then two coats of Murphy Varnish Co.'s transparent varnish, rubbed with pumice-stone and oil to a dead finish. The kitchen pantry, rear stairs, attic room, and bath room, have two coats of linseed oil well rubbed down. All glass for the building is of "AA" double thick American. All lights marked "PL" on the plans and elevations are polished American plate.

The house is piped for gas, and wired for electricity, all work and materials conforming to the National Electrical Code as endorsed by the Milwaukee Board of Fire Underwriters. The wires for electric lighting are white cord 98 per cent. copper, covered with rubber and braid. All wiring is continuous from sectional switch to last outlet on such circuit. There is a cut-out box at each floor, and all cut-outs are mounted on porcelain base firmly fixed to the cabinet. All cut-outs carrying more than 15 amperes are of the link pattern, and all others of the plug pattern. Each circuit is provided with a raised snap switch and located on the plans by the designation mentioned in the "note"

at the top of the second floor plan. The electric lights in combination with gas outlets are also marked on the plans, as well as electric outlets for electric lighting only. Speaking-tubes run from the laundry to the kitchen, and to the second and third-story main halls.

Separate pipes for fuel gas are used, and the entire gas fitting is done in accordance with the rules and regulations of the Milwaukee Gas Light Co., the work tested before plastering.

It is intended that the front of the building shall be 50 ft. back from the street line, and the water supply is taken from the main in the street by means of bass ferrules connected with 1-in. lead pipe and continued to the curb line, at which point a stop-cock with box and cover is located. From here  $\frac{5}{8}$ -in. branches extend to the various fixtures.

The soil pipe is 4-in. cast iron with lead-caulked joints, the pipe extending full size up to about 2 ft. above the highest part of the roof, or coping.

The sinks are 20 x 30 in. of gray enamel cast iron, provided with  $\frac{5}{8}$ -in. bibb cocks, the slop sink is of enamel cast iron 16 x 16 in., and having 2-in. cast iron waste with drip connected with sewage system. The galvanized iron boiler has a capacity of 66 gal., and is connected to the coil in the hot-water heater.

The bath room on the second floor has a 5-ft. "Como" tub with nickel-plated trimmings, jewel cup overflow and model waste, and the wash basin is 20 x 24-in. vitreous, lavatory model waste and nickel-plated trap. The bath room on the second floor is provided with an Itasca water closet; those in the basement and attic are of the Noma syphon washdown type.

The house is heated by sectional cast iron hot-water boiler, connecting with Standard radiators. The boiler is fitted with a coil for heating, which supplies various fixtures throughout the building with hot water.

The outside woodwork of the house is stained two coats dark brown color, while the roof has two coats of Patek Brothers' dark green shingle stain. All metal work and metal roofs have a first coat of mineral paint, and the other two of best lead and oil.

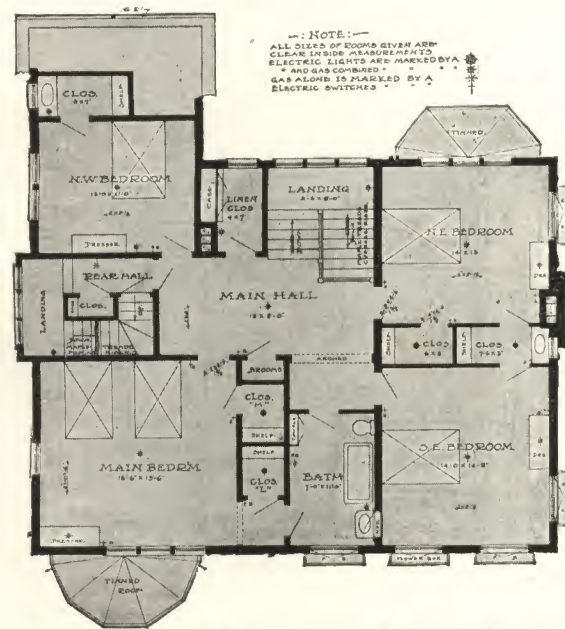
The house illustrated and described, was designed by Arthur Loos, architect, 426 Camp Building, Milwaukee, Wis.



DESIGN No. 5



First Floor.



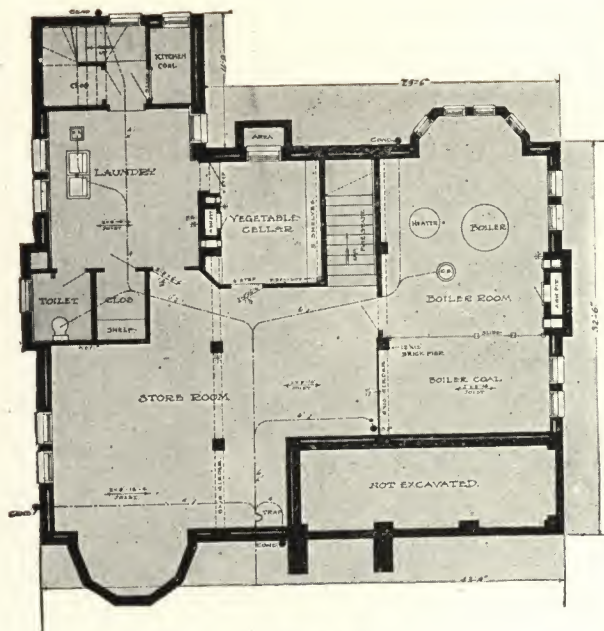
Second Floor.—Scale,  $\frac{1}{16}$  Inch to the Foot.



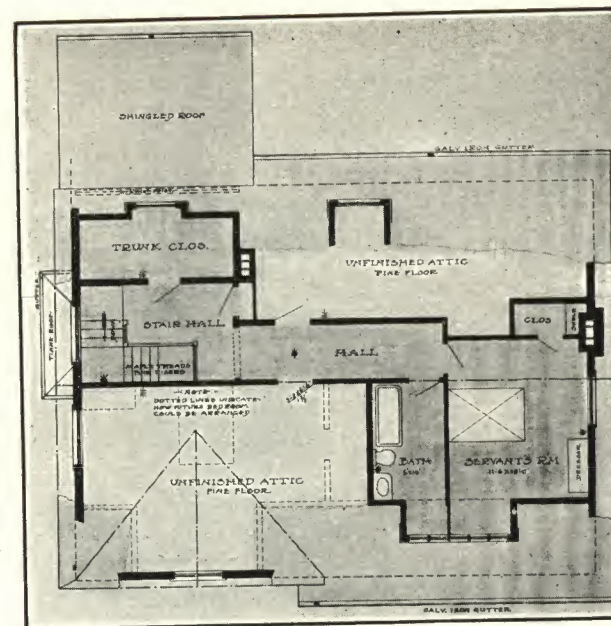
Front Elevation of the House.— $\frac{1}{8}$  Inch to the Foot.

ARCHITECT:  
ARTHUR LOOS,  
MILWAUKEE, WIS.





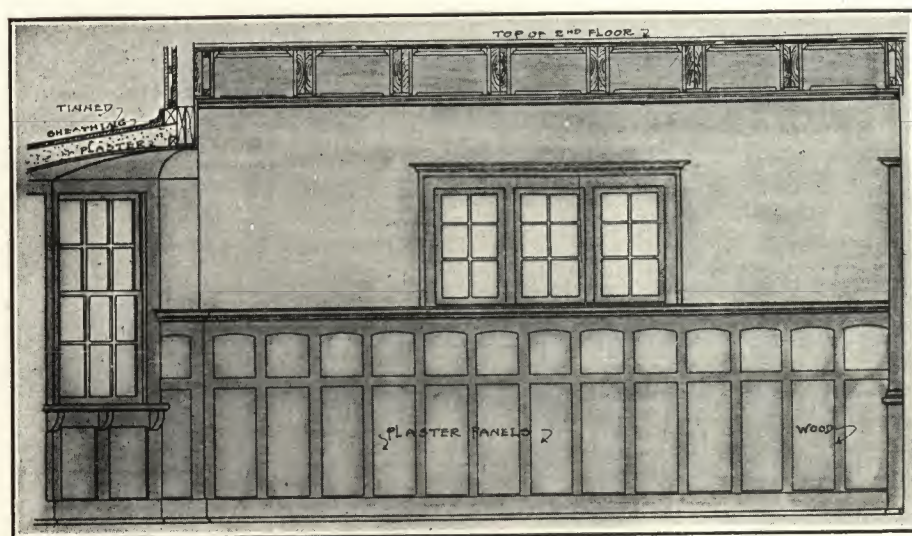
Foundation.



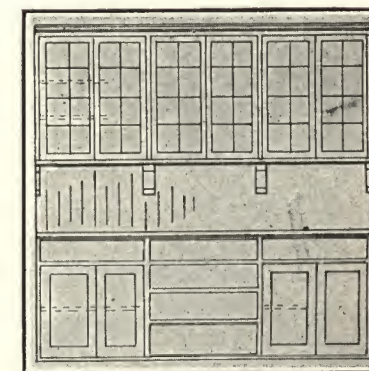
Attic Plan with Outline of Roof.

## DESIGN No. 5

Floor Plans.—Scale,  $\frac{1}{8}$  Inch to the Foot.



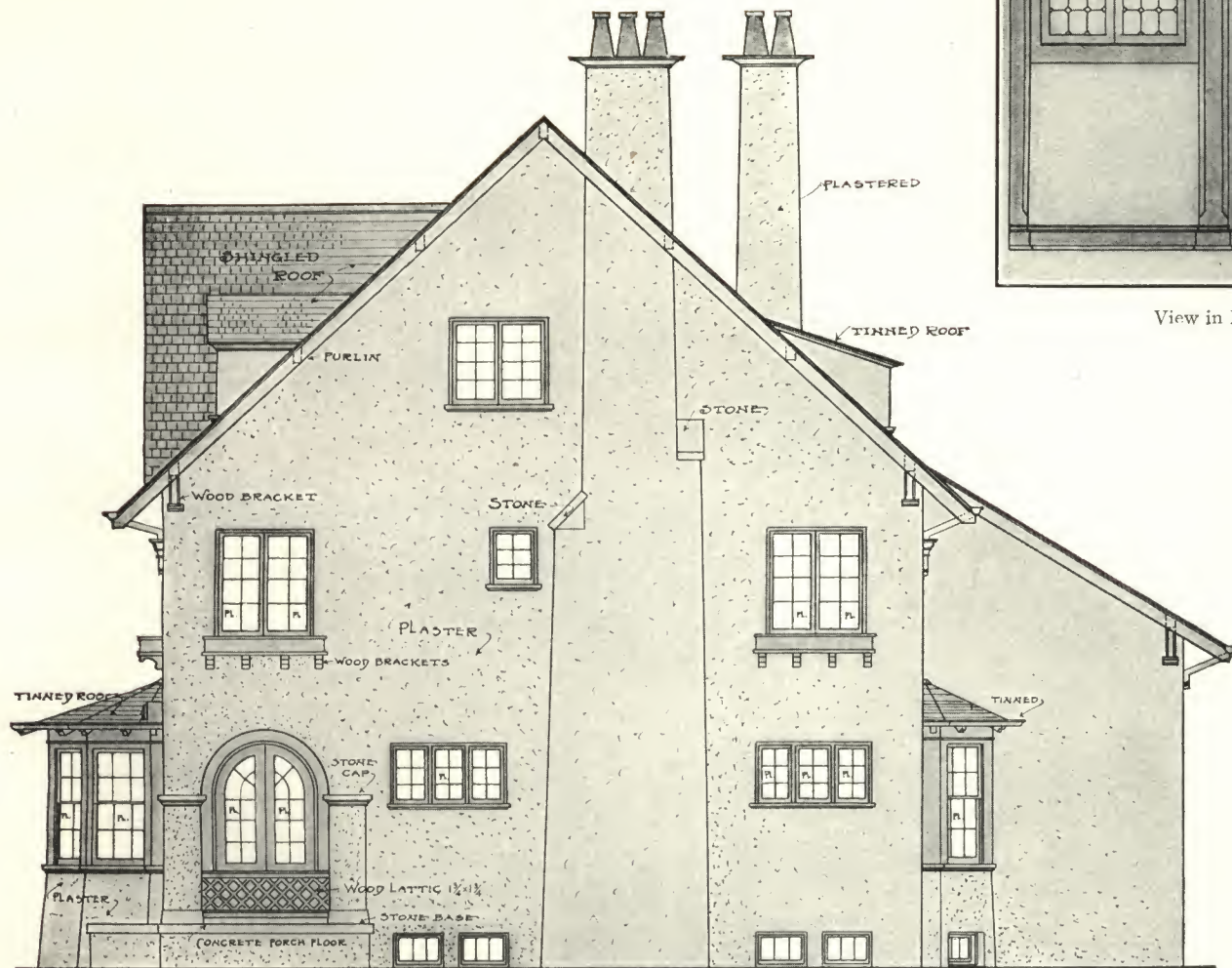
West Wall of Dining Room, with Section of Flower Bay at the Left.—  
Scale,  $\frac{1}{8}$  Inch to the Foot.



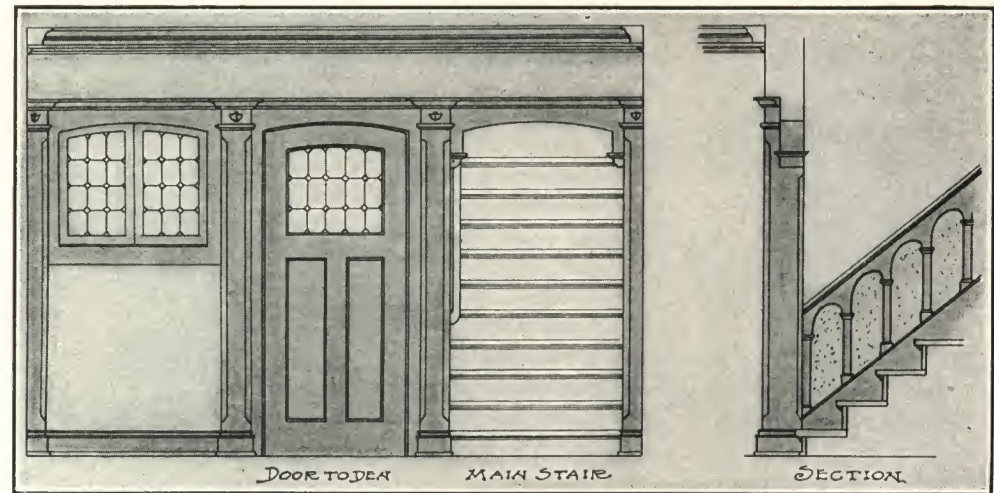
Elevation of China Closet.



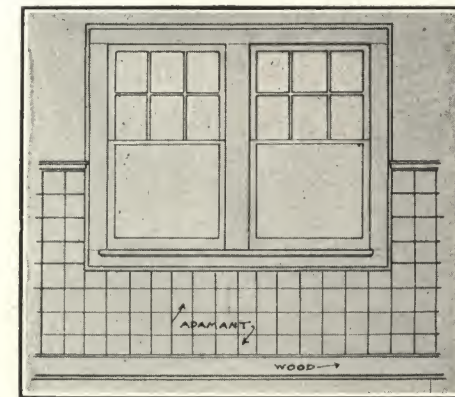
DESIGN No. 5



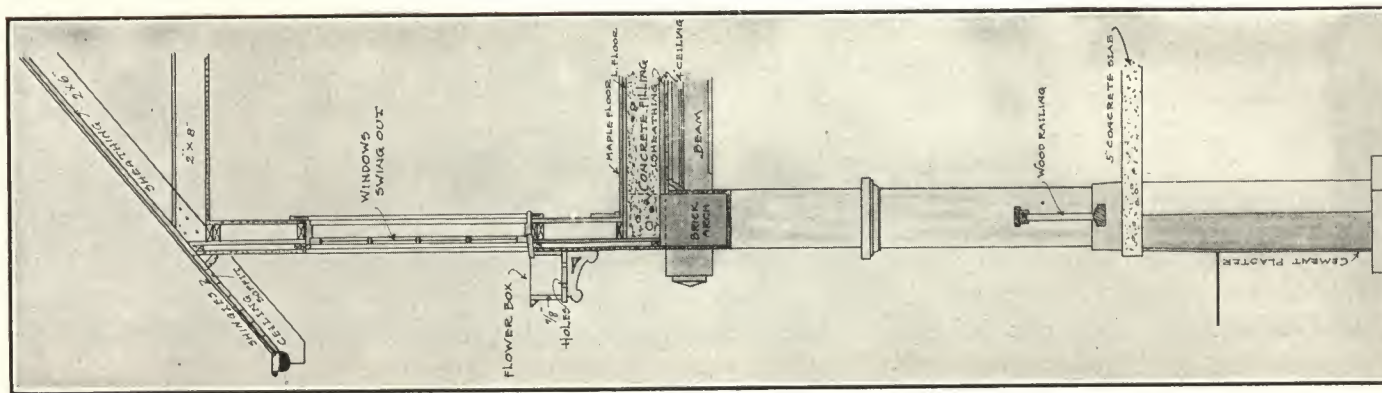
Side (Right) Elevation, Showing the Covered Porch.—Scale,  $\frac{1}{4}$  Inch to the Foot.



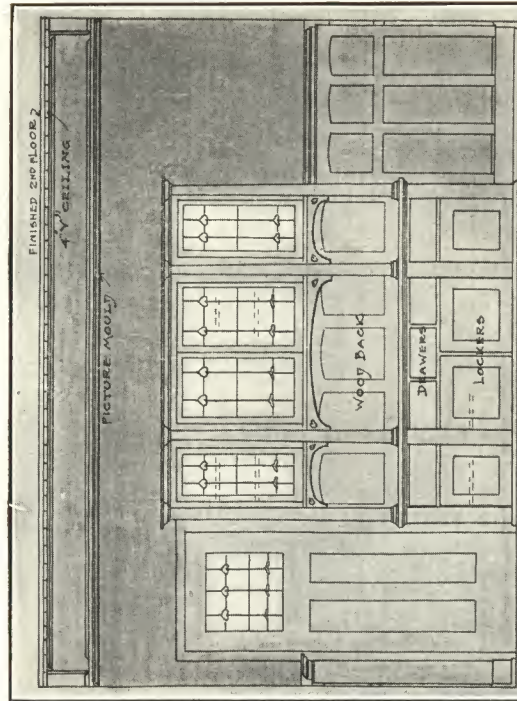
View in Reception Room Looking Toward "Den" and Main Stairs.



View in Kitchen, Looking Toward the Double Windows, Showing Trim and Adamant Wainscoting.—Scale,  $\frac{1}{4}$  Inch to the Foot.

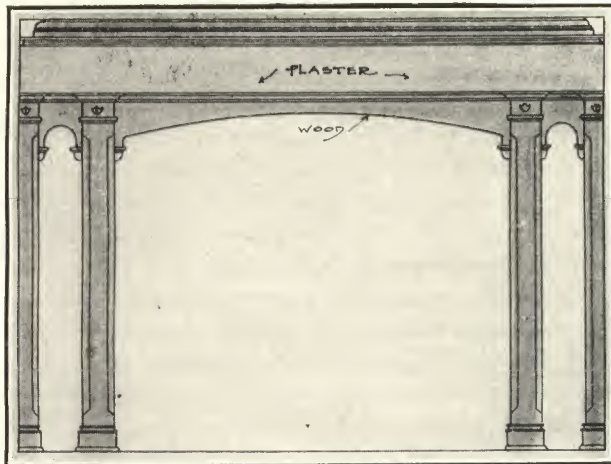


Section Through Building, Showing Method of Construction at the Various Floor Levels, Also the Details of Cornice and Water Table.

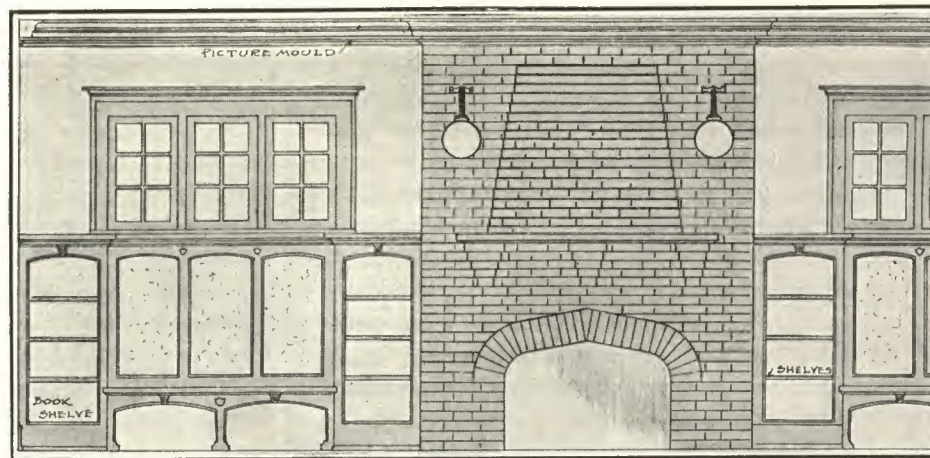


North Wall of Dining Room.



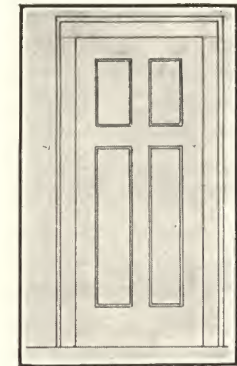


East Wall of Reception Room.

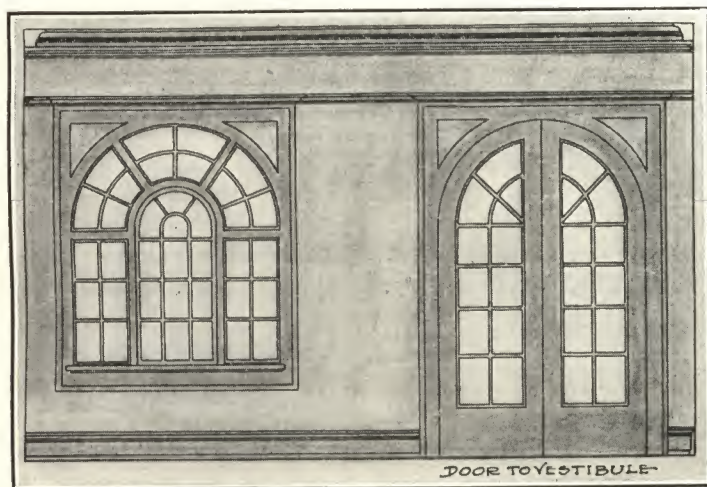


East Wall of Living Room, Showing Brick Mantel and Fireplace, with Seat and Book Shelves at Right and Left of It.

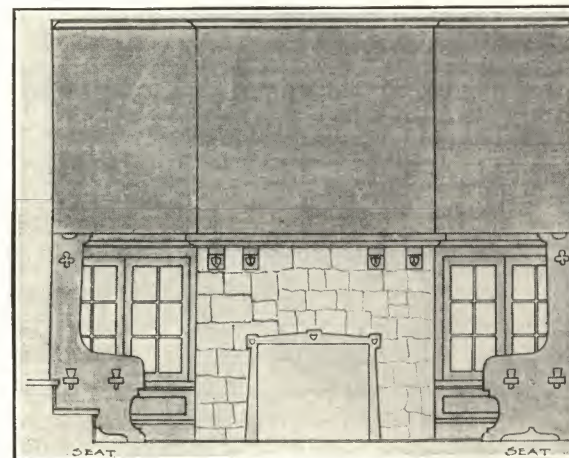
Scale,  $\frac{1}{4}$  Inch to the Foot.



Elevation of a Typical Door, Showing Style of Trim.



South Wall of Reception Room.



View Showing Den Finish.

Miscellaneous Constructive Details.—Scale,  $\frac{1}{4}$  Inch to the Foot.

DESIGN No. 5





## DESIGN No. 6

\$6000

It is only in the last five or six years, that there has been a strictly American type of dwelling—one which had its origin, and has had its development almost exclusively on American soil. This is the fireproof house. The causes responsible for it are economic—the depletion of the forests, the consequent rise in the price of wood, and the fall in the relative price of solid materials, and the loss by fire, and actual decay.

A prestige, remarkable for a new kind of building, is gained for this type, because of the support immediately extending to it by the foremost architects and builders of the country. It is notable that the persons who were pioneers in the movement toward fireproof house construction were not merely impractical experimenters, but were men who had great knowledge of the possibilities of tile and concrete. Engineers and architects are prominent among those who have chosen indestructible materials for their own houses, and one hears every day the name of some famous designer connected with the building of a fireproof dwelling.

The construction which has established itself more firmly than any other, is that in which a combination of hollow tile blocks and concrete is used—the tile for walls, partitions, and floors, the concrete for foundations, and girders, and beams. Perhaps the greatest single recommendation of this type is this, that it is equally attractive to the man of wealth, and to the man of moderate income. In this respect it has all the advantages of wood. In suburban communities, sometimes, a five or six thousand-dollar fireproof house is found within a short distance of a house no more fireproof, but, for other reasons, erected at a cost ten times as great.

One of the latest instances of low-priced fireproof construction is seen on Madison avenue, in Plainfield, N. J., where Mr. DeWitt Hubbell has built a house of tile and concrete for \$6,000. As this is one of many of the kind, it will serve as a good illustration of what can be accomplished for a moderate sum.

The basic material in Mr. Hubbell's house is the hollow terra cotta block, more commonly known as the hollow tile block. It is the same article that has been used for years in large commercial buildings, strictly as fireproofing protection. The tall buildings in New York City, contain millions upon millions

of tons of square feet of these blocks in their floors and partitions, and around the members of the steel framework.

In the dwellings here under consideration, however, the tile is not used for "filling in." It is the structural member itself, and is laid in the walls and partitions, in the same way that brick would be laid. In the floors the blocks are placed in rows between concrete beams. The outside wall blocks are 8 in. thick, the floor blocks 6 in. thick, and the partition blocks 3 in. thick.

In the walls, the blocks are laid with hollow spaces running perpendicularly. This creates so-called "dead-air" spaces, which act as non-conductors of heat, thereby giving the house one of the principal advantages that pertain to this type of construction—warmth in winter, and coolness in summer. This has a very intimate relation to the family's coal bill during one part of the year, and to the ice, and electric fan bill during another part.

The Hubbell house measures 30 x 40 feet, and has two stories, in addition to the basement and attic. On the first floor are the living room, the reception room, the dining room, the kitchen, and the butler's pantry. On the second floor are three bedrooms, a den, and a bath room; the attic has two rooms, and in the basement there is space for the furnace, and the laundry.

There are two ways in which a house may take fire, from within, or from some neighboring buildings. In both directions the hollow tile and concrete house is protected. With the walls and roof incombustible, its immunity from danger without, is obvious. On the inside the danger of any great loss is prevented by the barriers which are formed by the floors, and partitions. If a blaze happens to start within one of the rooms, it can be easily extinguished before it spreads.

The cost of such a building as this is about 12 per cent. greater than that of a wooden residence of the same design, but this seems a very small difference when one considers the great permanent saving resulting from the original outlay. To begin with, the insurance is much lower. The depreciation amounts to almost nothing, if ordinary precautions are taken by the architect and owner to see that the design is strictly followed. While a wooden house needs to be painted every three or four years, the fireproof house needs no repainting. It is absolutely impregnable against the attacks of insects of every kind. Less

#### DESIGN No. 6—Continued

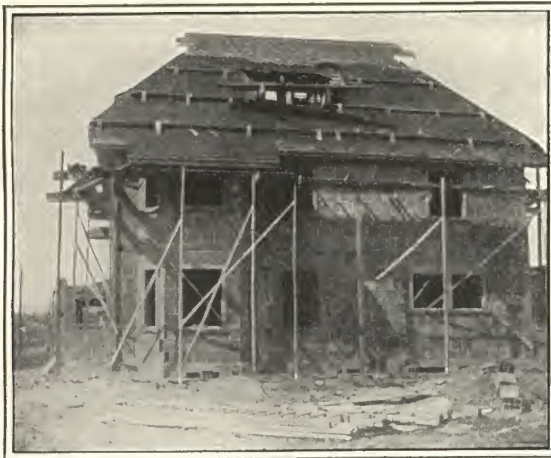
fuel is required to heat it, and it is only natural that the visits of a doctor, which are often made necessary by cold and drafty rooms, are much less frequent in a solidly constructed house, than in one of wood.

It should be remembered, that when a house like Mr. Hubbell's is completed, the hollow tile is invisible. The exterior of the Plainfield house is covered with a rough-cast stucco composed of 1 part cement and 3 parts sand. Three coats of stucco were applied. On the inside the plaster is applied directly to the terra cotta surface, just as the stucco on the outside. Over the terra cotta floor can be laid a surface floor of any style that the owner may choose, and the ceiling may be of cement and stained in any color. As the design shows, Mr. Hubbell had the eaves turned brown to represent a thatched roof. Since the work was finished he has planted flowers and shrubbery, so that now the place looks indeed like an "old homestead." One addition that may be made, is a sleeping porch in the rear.

An interesting feature of the actual work, is, that it was carried on in winter. The job was begun in January, and the men kept at it without a break until it was finished.

To an architect, the most interesting consideration about the new fire-proof construction is this question: Does it present a full opportunity for the display of the designer's talent? The answer to this is an emphatic "Yes." The very stability of the materials impose upon the architect, a responsibility that he cannot fill when designing a temporary house. This house, he knows, is going to stay. It is going to be a monument to his success, or failure. Furthermore, the character of the material prevents the designer from "running wild," so to speak. He is forced to confine himself to a more or less dignified type of structure—one that depends for its beauty more on the large qualities of grace and symmetry, than upon striking or freakish departures from the ordinary rules.





View of House Before Outside Coat of Cement Had Been Applied.



View Looking up Madison Avenue, the House being the Second One in the Row.

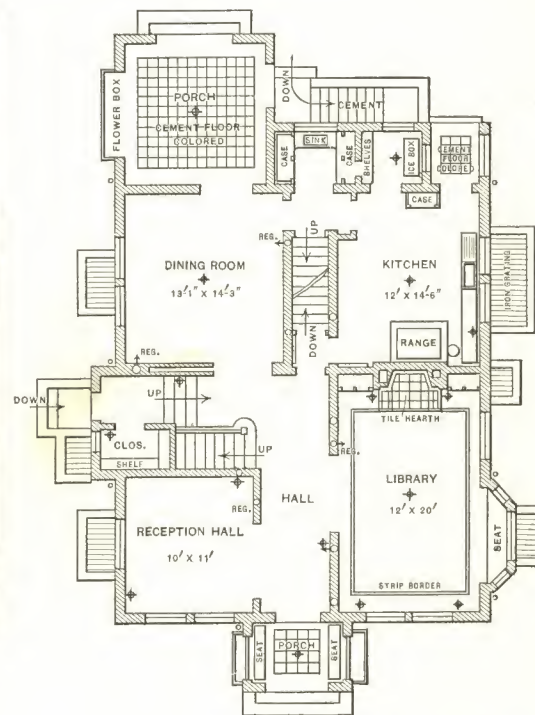


Rear View of the House.



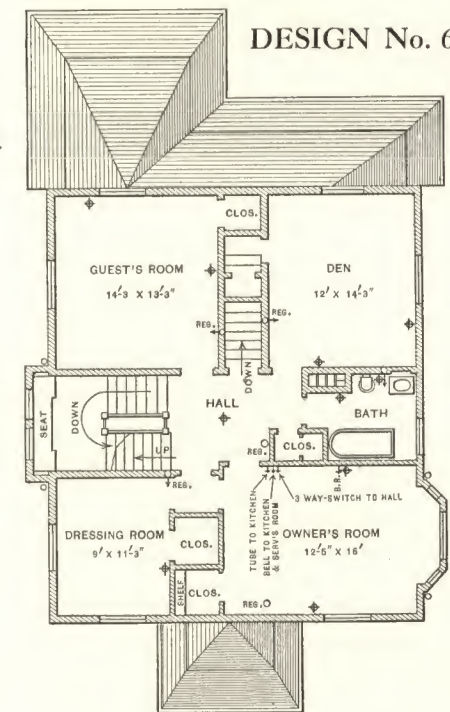
Front View of House Constructed of Hollow Tile Blocks and Concrete.

ARCHITECTS:  
SQUIRES & WYNCOOP,  
NEW YORK CITY.



Main Floor Plan.

Floor Plans.



Second Floor Plan.

Scale,  $\frac{1}{16}$  Inch to the Foot.

DESIGN No. 6





## DESIGN No. 7

\$8000

So much has been said about the houses designed by architects for other people, that anything an architect would plan for his own occupancy arouses great interest. Much of course depends upon the taste and temperament of the architect, and local conditions must govern the way in which the problem is finally worked out. A point also to be borne in mind is the varying degree of individual requirements, which naturally exert a very important influence upon the number and arrangement of the rooms of any house. An excellent idea of what one architect designed for a home of his own, may be gathered from an inspection of the half-tone engravings, plans, elevations and details presented herewith. The half-tone plates show among other things the appearance of the completed structure, with the carriage house and stable, also used as a garage, in the back-ground. One of the three interiors, the lower one on the second plate represents the living room, the smaller one in the upper right hand corner the dining room, and the one in the upper left hand corner the "den" on the second floor.

The building is of balloon frame construction, with an outside veneer of Iowa brick blocks or tile with granite face 5 x 10 in. in size and white in color. The gables are covered with siding, and the roof is of black Bangor slate. The outside trim is white, the sash painted black.

The rooms on the first floor with the exception of the kitchen are finished in oak with quarter-sawed oak floors; the kitchen and the rooms on the second and third floors are finished in birch. The kitchen floor is maple, the second and third story floors selected red birch. All floors are double, the rough ones 6 in. fencing boards, the finished ones  $\frac{7}{8}$  x 2-in. in the different woods.

The house is wired for electric lighting, in accordance with

the rules and regulations of the National Board of Fire Underwriters and city ordinances. The wiring along the brick walls is protected with iron tubing and the woodwork with porcelain insulators. The cut-out box is lined with 10-lb. sheet asbestos, and in it is placed a double pole covered cut-out block properly fused and provided with an approved knife switch. The switches are of the Perkins flush snap type, the faces matching the hardwood of the rooms in which they are placed.

The plumbing fixtures are of the J. L. Mott Iron Works make, the bathtub white enameled inside and out. The water for the bathtub and shower, is heated by a No. 10, Crescent water heater, made by the Humphrey Company, Kalamazoo, Mich.

The heating of the house is by means of the vacuum steam system of the Kellogg-Mackay Company, Chicago, in connection with a Mott boiler, the latter bricked in, and all pipes covered with insulating material.

The residence and carriage house were designed by and built by U. M. Dustman, architect, Freeport, Ill. The brick tile used for veneer purposes was made by the Iowa Granite Brick Company, Clinton, Iowa, and the work of construction was executed by J. M. & H. H. Hineline, contractors, Freeport, Ill.

The carriage house and stable, shown just at the left and rear of the house on one of the half-tone plates, is 24 x 32 ft. in plan, and has walls of cement concrete 4 ft. high, upon which is a frame structure covered with 5-in. siding and stained shingles. On the main floor of the building is a carriage room 18 x 24 ft. in area, a box stall 14 x 14 ft., a granary and a closet, while on the second floor is the hayloft, and a bedroom for the chauffeur or coachman.







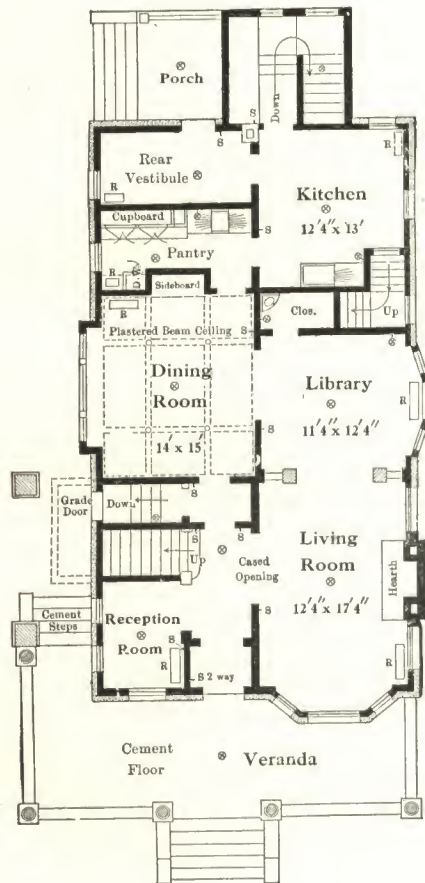
The Brick-tile Veneered Residence of Mr. U. M. Dustman, at Freeport, Illinois.  
U. M. DUSTMAN, ARCHITECT.





ARCHITECT:  
U. M. DUSTMAN,  
FREEPORT, ILL.

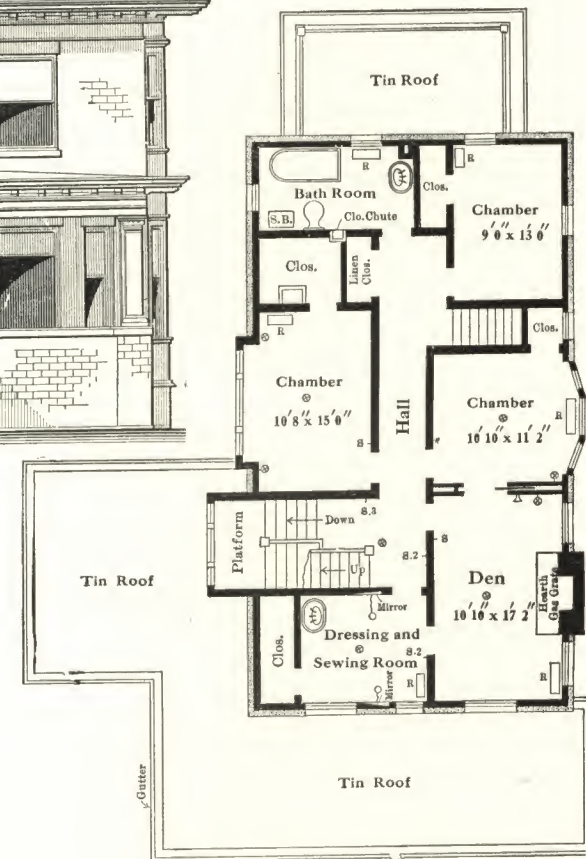
DESIGN No. 7



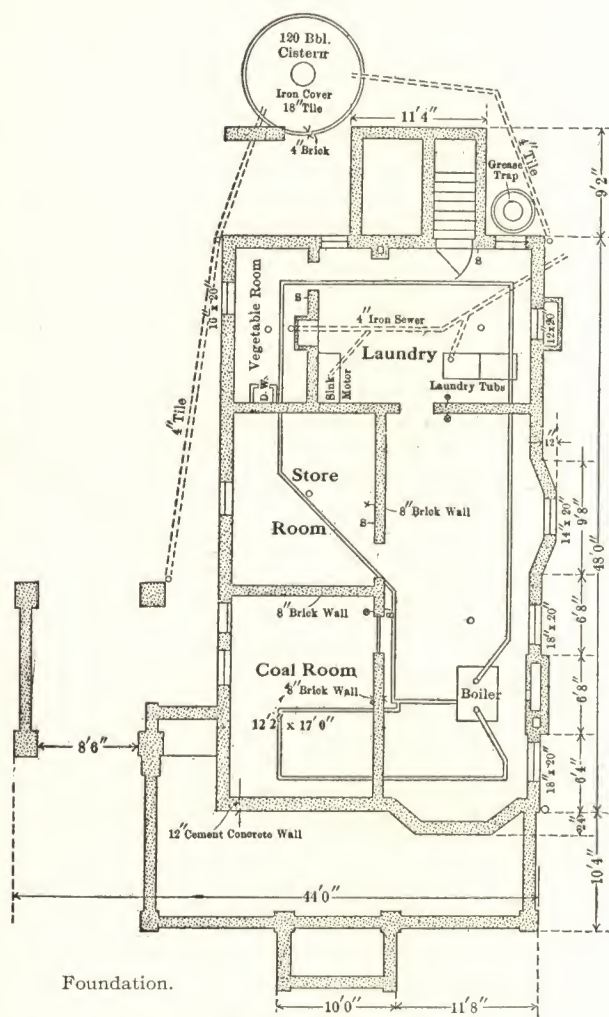
First Floor.—Scale,  $\frac{1}{16}$  Inch to the Foot.



Front Elevation.—Scale,  $\frac{3}{32}$  Inch to the Foot

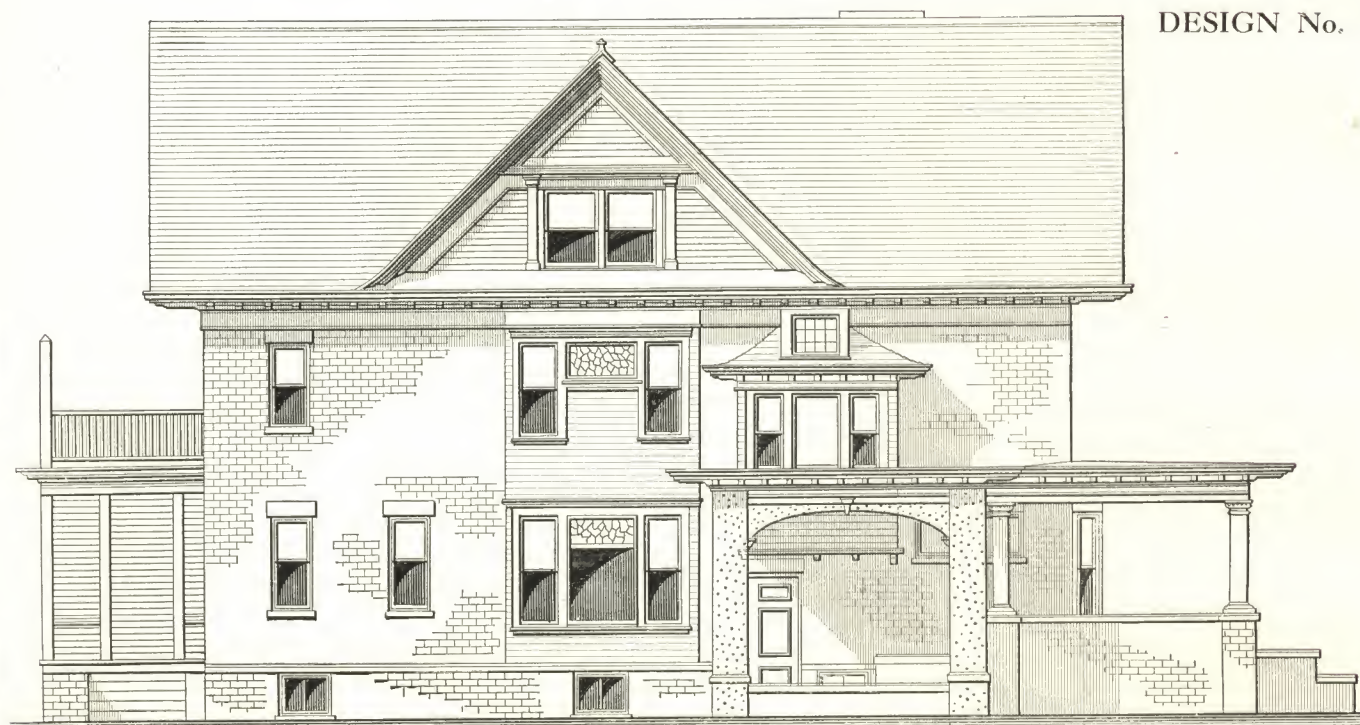


Second Floor.—Scale,  $\frac{1}{16}$  Inch to the Foot.



Scale,  $\frac{1}{16}$  Inch to the Foot.

DESIGN No. 7





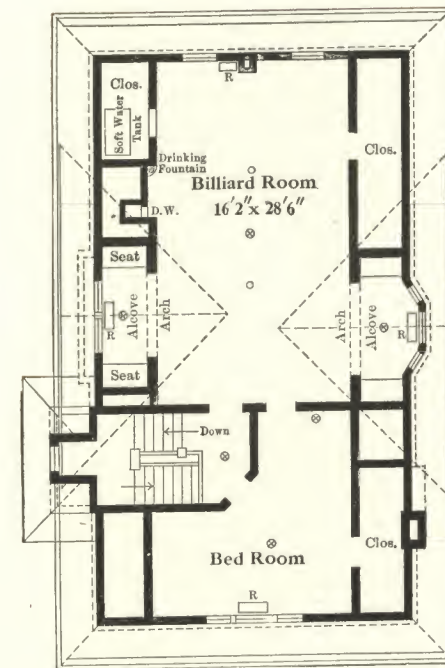


Billiard Room on Third Floor Fitted Up as a Sleeping Room.



General View of the House and its Surroundings, with Barn and Garage at the Rear.

## DESIGN No. 7



Third Floor.—Scale,  $\frac{1}{16}$  Inch to the Foot.





View in "Den" on Second Floor, with Dressing Room at the left, and a Sleeping Room at the Right.



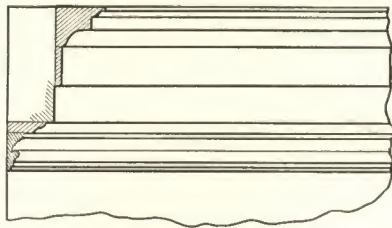
The Dining Room as Seen from a Point near the Door Leading to the Front Hall.



View in Living Room and Library showing General Style of Finish.

U. M. DUSTMAN, ARCHITECT.

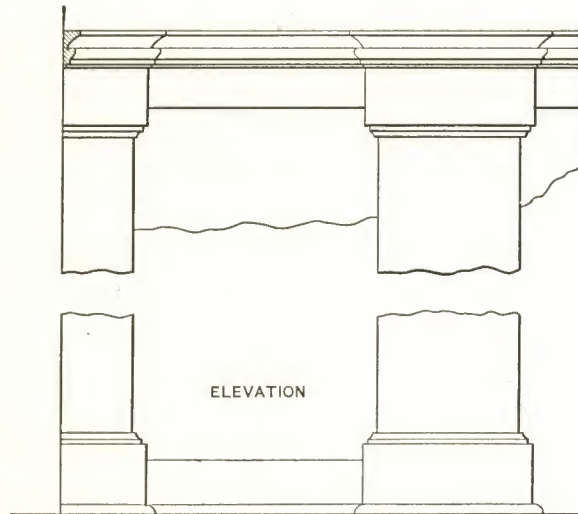




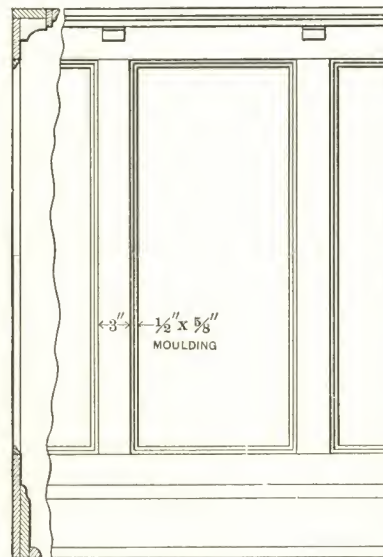
Detail of Beam Construction in Dining Room.



The Main Stairs. Showing Style of Trim.



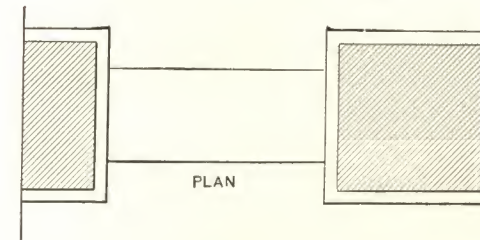
ELEVATION



Details of Wainscot and Base in Dining Room.—  
Scale,  $\frac{3}{4}$  Inch to the Foot.

## DESIGN No. 7

Details of Columns and Trim Between Living Room and  
Library.—Scale,  $\frac{3}{4}$  Inch to the Foot.



PLAN



The Gas Grate and Mantel in the "Den" on Second Floor.





# DESIGN No. 8

\$8000

WE present herewith the plans, elevations and details of an \$8,000 house designed by Charles H. Kingston of Worcester, Mass., together with the accompanying brief specifications outlining construction, and with an indication of the materials to be used, and with a detailed estimate of cost.

We would call attention to the attractiveness of the exterior of the house, the compact and convenient arrangement of the rooms on the first and second floor, as well as the good cellar and attic; to the convenience afforded by the stair arrangement presented, whereby it is possible to go from the kitchen to the rooms in the attic without entering the main portion of the house. Mention also should be made of the convenience of the lavatory and bathroom arrangement on the second floor.

## SPECIFICATIONS.

In the specifications, we call attention to the fact that the contractor is to furnish labor and provide the materials necessary to complete and execute the work in accordance with the drawings and specifications, and also, referring to the excavation work, we would point out that the cellar is to be excavated the full depth to make a clear height of 7 ft. 6 in., and that for trenches, piers, chimneys and other places required, the ground is to be excavated to a depth so that all will be 6 in. below the cellar bottom as well as the frost line, and rest on hard ground. The specifications read as follows:

### MASON WORK.

Properly construct all foundation walls, footings, piazza piers, and other foundation work necessary to complete the work according to drawings.

CONCRETE FOUNDATIONS.—To be made of one part Portland cement, three parts sand, and six parts clean gravel. Stone to be not more than will pass through a 2-in. ring.

CONCRETE BLOCKS.—The underpinning work exposed above grade to

be made of concrete blocks 8 in. by 1 ft. 8 in. by 10 in. The part covered by verandas to be done same as foundations.

CHIMNEYS.—To be built of common brick, laid up in mortar composed of best lime, cement, and sand. To have 8 x 12 terra cotta flue lining from bottom of thimble or fireplace to top, with an iron door at bottom of each flue. To be a cast iron thimble for heater, laundry and kitchen stoves. All exposed parts of chimney above roof to be plastered same as outside of house.

FIREPLACES.—Build a red brick fireplace in hall, first floor, like sketch No. 17, in Philadelphia & Boston Face Brick Company's catalogue.

Build a red brick fireplace in chamber second floor like one in hall.

### PLASTERING.

OUTSIDE PLASTERING.—All the outside walls of building, including verandas and chimneys, where shown to be covered with the Sackett plaster board, well fastened in place, then to be plastered all over with two coats of mortar, composed of one-half lime and one-half Portland cement, the first coat to be a scratch coat and the last to be left under a float.

WOOD LATHING.—All walls and ceilings where to be plastered to be lathed with dry spruce lath  $\frac{3}{8}$  in. thick, with joints well broken.

INSIDE PLASTERING.—Cover all walls and ceilings with two coats of lime, hair and sand mortar. Mortar to extend to floor and to jambs and crowns.

### CARPENTER WORK.

Furnish all materials and perform all labor in connection with carpenter work and helping other mechanics.

All framing work to be done as shown in a thorough manner, placing joist, rafters and girders, crowning edge up.

## DESIGN No. 8—Continued

All partitions to have sill and cap same size as studding.  
Angles and corners to be solid, and openings and corners to have piece nailed on to secure base.

Frame the roof, as shown, with hips, rafters, &c., made to fit close at ends and well spiked.

All openings to be trussed at right angles to joist.

FURRING FOR CEILINGS.—Ceilings above cellar to be cross furred with 1 x 3 in. planed spruce strips, put on 16 in. on centers.

VERANDA SUPPORTS.—To be made of concrete, as before specified.

IRON COLUMNS.—Beams under first floor to be supported on 3½-in. iron posts, with cap and base.

BRIDGING.—Joist to be bridged with 1 x 3 spruce strips, cut to fit at ends and fastened with two nails at each end.

DIMENSIONS OF TIMBER.—Dimension timber to be good merchantable squared edge spruce and of the following sizes:

First floor girder.....	8 x 8	Ledgers .....	1 x 6
Sills .....	4 x 7	Braces .....	1 x 6
First floor joist.....	2 x 8	Wall studs .....	2 x 4
Second floor joist.....	2 x 10	Main partition studs.....	2 x 3    2 x 4
Third floor joist.....	2 x 7	Piazza sills .....	6 x 6
Collar beams .....	2 x 6	Piazza joist .....	2 x 6
Rafters .....	2 x 7	Piazza rafters .....	2 x 6
Hips and valleys.....	3 x 10	Wall plates, double.....	2 x 4
Posts .....	4 x 6		

Joist, studding, and furring, to be placed 16 in. on centers, and rafters, and collar beams 20 in. on centers.

GROUND AND BEADS.—To be ¾-in. grounds around openings, and at bottom of partitions, and beads on corners to plaster against.

FLOORS.—Lining floors to be 7⁄8-in. square edge planed hemlock, laid close and thoroughly nailed.

WALL BOARDING.—All boarding to be done with 7⁄8-in. planed, tongued, and grooved spruce boards, laid close and thoroughly nailed.

ROOF BOARDING.—Roof to be boarded with 7⁄8-in. matched spruce boards, well put in place and thoroughly nailed.

BUILDING PAPER.—Put black sheathing paper, well lapped, under all finish, &c. Put floor paper under all top floors, and two thicknesses between floors at all projections.

ROOF SLATING.—All roofs to be covered with best quality 8 x 10 in. unfading red slate, laid with a 3-in. underlap, and nailed with galvanized iron nails.

CELLAR PARTITIONS.—The partitions in cellar to be done with 2 x 3 studs and matched spruce boards laid close. Doors to be made of matched pine boards.

ENTRANCE TO CELLAR.—To be built with frame, doors, &c., and well fastened in place, finished on top and sides and have sheathing covers.

### FINISH WORK FOR OUTSIDE.

Provide and put in place all finish shown, and to be made from good quality smoothly planed cypress, free from imperfections that will show after being painted.

VERANDA FLOORS, ETC.—The floor to be of 1½ x 5 in. No. 1 spruce. The ceiling to be of clear cypress sheathing, with 2-in. bed molding. The balustrade, &c., to be built as per detail, with 1½ x 2-in. balusters.

VERANDA STEPS.—Steps to be built on 2-in. plank stringers, 1¾-in. treads, and 7⁄8-in. risers. To be three sets in all. Treads to have round nosing and scotia under.

DOOR FRAMES AND DOORS.—Frames to be rabbeted to fit 1¾-in. doors, and have hardwood thresholds and casings same as windows. Frame for front door to have division pieces for door and side lights. Side light sash to be 1½ in. thick.

The front door to be best red birch, 1¾ in. thick and molded. To have panels and clear bevel plate glass in large panel. Side light sash to be glazed with No. 1 double thick glass.

The rear door to be best North Carolina pine, 1¾ in. thick, flush molded, and have No. 1, double thick glass in top panel.

WINDOW FRAMES, SASH, AND GLASS.—All to be made as per detail, and to fit their several positions. Cellar frames to be fitted with 1¼-in. sash. Sills to be made wide enough to project by concrete work ½ in. Frames above cellar to have 7⁄8 yellow pine pulley stiles, grooved for 1⅜-in. lip sash. To be fitted with 2-in. steel bronze finish face axle pulleys, well fitted in place. To have molding around outside.

Frames to be fitted with best pine double sliding sash 1⅜ in. thick, glazed with first quality sheet glass, double thick for large light sash and single thick



## DESIGN No. 8—Continued

for small cut up sash, all to be hung and evenly balanced with cast iron weights and Silver Lake spot sash cords, made to run smooth and even. Cellar sash to be  $1\frac{1}{4}$  in. thick, hung at top with two 3-in. wrought butts. To have lock fastener and fixtures to hold open. All windows above basement to have pine blinds.

### INTERIOR FINISH WORK.

Provide and put in place all finish described or intended to finish and complete the work, and to be worked out from good, sound, clear, kiln dried stock. All not otherwise mentioned to be hand smoothed and sandpapered before putting in place. To be put up with neat and close joints. The doors and jambs to be made to conform to finish of rooms they face.

FLOORS.—The front hall, vestibule, living room, and den to have a finished floor of best  $\frac{7}{8} \times 2\frac{1}{2}$  in. maple flooring, driven together. The dining room to have a finished floor of  $\frac{7}{8} \times 2\frac{1}{2}$  in. oak flooring, well driven together. To be blind nailed, laid close with running joints and laid crosswise of lining floors. All hardwood floors to have a small molding between base and floor.

The kitchen, pantry, lobby, lavatory, entry, &c., to have planed and matched  $\frac{7}{8} \times 3$  in. birch flooring, blind nailed, laid close with running joints and well smoothed up.

The floors of second story and attic to be done with best quality slash grained North Carolina pine flooring, not more than 4 in. wide. To be well matched, laid close, blind nailed and well smoothed up.

FINISH.—The vestibule, front hall, living room, and den to be finished with best birch.

The dining room to be finished in best quality oak.

Kitchen, pantry and entry to be finished with best North Carolina hard pine.

The second floor, and attic, and all closets to be finished in whitewood to paint.

DOORS AND JAMBS.—Door jambs to be  $1\frac{3}{8}$  in. thick. Sliding door and cased opening jambs to be  $\frac{7}{8}$  in. thick.

The doors leading from the front hall, living room, den, and dining room to be  $1\frac{1}{2}$  in. thick, three panels, as per detail. Other doors to be  $1\frac{3}{8}$  in. thick, with six cross panels. Slide door to be  $1\frac{3}{4}$  in. thick, same style as those of front hall. The vestibule door to have double thick glass in large panel.

STYLE OF DOOR AND WINDOW FINISH.—Front hall, vestibule, living room, den, and dining room to have  $1 \times 5$  in. casings, mitered at corners, and have corner and plinth blocks. Kitchen, pantry, entry, &c., to have  $1 \times 5$  in. plain header. All other rooms to have  $1 \times 5$  in. plain header, and a 1-in. molding around top. Windows to have stools 1 in. thick, and 4-in. aprons. Stop beads to be  $\frac{1}{2}$  in. thick, tops nailed in and sides fastened in with flat head brass screws.

BASE AND MOLDING.—The vestibule, front hall, living room, den, and dining room to have a 9-in. base and a 2-in. molding. The remaining rooms not wainscoted to have a 9-in. base.

SHEATHING WAINSCOTING.—The kitchen, entry, attic, bathroom and lavatories to be sheathed 4 ft. high with narrow V sheathing, put on vertical, blind nailed, and have a molded cap  $3\frac{1}{2}$  in. on top.

OAK WAINSCOTING.—The dining room to be paneled up 6 ft. high, with a plate rail on top, as per detail.

TILE FLOOR AND WAINSCOTING.—The bath room, and second floor, to have a tile floor and side walls up 4 ft. with a cap on top.

PLATE RAIL.—The den to have a plate rail  $3\frac{1}{2}$  in. wide up 6 ft. from floor.

CORNICE AND PICTURE MOLDING.—The hall and living room to have a cornice molding 4 in. wide, and a picture molding  $1\frac{1}{2}$  in. wide, same style as shown for dining room.

BEAMING.—The dining room ceiling to be beamed as shown by detail. To be plastered between beams.

SEATS.—The seat in hall to be made as per detail.

The seat in living room to be made to fit between bookcases, as per detail.

The seat in dining room to be made same as living room, paneled below seat part.

The seat in chambers to be made with a tight box inside and have a lid. The base to continue across bottom, and back to be formed with surbase and stool at top.

BOOKCASES.—To be made as per detail, with drawers at bottom, and two glass doors above, and have movable shelves.

CHINA CLOSET.—To have broad shelf up 2 ft. 10 in. Under to be two panel doors into closets and drawers. Above, to be two sash doors, closing in shelves, all as per detail.



## DESIGN No. 8—Continued

**CLOTHES CLOSETS.**—To have a 6-in. bevel base and 4-in. plain casing, two rows of strips with wardrobe hooks and shelf or shelves.

**PANTRY.**—To be a broad shelf up 2 ft. 8 in., with a case of three drawers under, and remaining space under broad shelf to be sheathed in with sheathing doors and have a hanger for flour barrel. Above broad shelf to be four 12-in. shelves, resting on rabbeted cleats, all closed in from bottom of narrow shelf to top shelf and have panel doors. Fit up enamel iron sink where shown.

**LINEN CASE.**—To be a linen case in second-story hall with five broad shelves, all cased in with four doors; under, to be a case of eight drawers.

**MEDICINE CLOSET.**—In hall, to be five shelves on rabbeted cleats, closed in with a panel door, and have a case of three drawers under.

**CLOTHES CHUTE.**—To be built of pine boards, with small lid or door at each story, to extend into cellar, with a stop at bottom.

**SINKS.**—One in kitchen to be slate, 22 x 42 in. and 8 in. deep, with grooved drip shelves pitching toward sink. Back to be 14 in. high. All parts to be well cemented and fastened together. To be a case of three drawers under each shelf and remaining space closed in with a door.

To be a 16 x 24 in. enameled iron sink in pantry. To have slate back and end 14 in. high.

**SET TUBS.**—Of soapstone, and fitted up in laundry 2 ft. 10 in. from floor to top, and supported on iron legs. Over, to be a back of wood 14 in. high.

**PLUMBING FIXTURES.**—To be fitted up in usual manner for open work, the plumber to furnish seats, tanks, and brackets, and the carpenter to put all woodwork in place. The carpenter is to put up any necessary shelves to run pipes on.

**ATTIC TANK.**—Build a 40-gal. tank, made in substantial manner of 1½-in. pine plank. To be lined by plumber and set in unfinished attic.

**SHELVES.**—To be a shelf 6 in. by 2 ft. 6 in. in kitchen. The lavatories and bath, second floor, to have glass shelves 6 in. by 2 ft., set on nickel plated brackets.

**MANTEL.**—To be a wood mantel with bevel mirror, in living room, over fireplace.

**STAIRS.**—Build front stairs a buttress flight, as per detail, of birch, to be finished Colonial style. To have 2-in. stringers, 1⅛-in. treads, and ⅞-in.

risers, tongued and grooved together. Newel post to be 7 in. square, paneled, and angle posts 5 x 5, with moldings at top, as shown. Rails to connect to post 2 in. below cap. Balusters to be 1½-in. turned, three to a tread.

The stairs at rear continuing to attic, to be built of hard pine, with hanging handrail on each flight.

Cellar stairs to be made of spruce.

**HARDWARE TRIMMINGS.**—The contractor is to purchase the trimmings of hardware for the whole job, and neatly put the whole in place.

**WALL AND CEILING DECORATIONS.**—All the walls not painted, to be covered with good wall paper and moldings. The ceilings of hall and living room and dining room between the beams, to be tinted in usual manner.

## HEATING.

This building is to be heated by steam, one pipe system with "Rococo" three-column plain radiators. The boiler is to be an "Ideal," and have a 26-in. firepot. The radiation is 550 ft., and is sufficient to heat the building to 70 degrees at zero weather.

## ELECTRIC WORK.

**BELLS.**—To be three bells in kitchen or lobby, one to ring from front door, one to ring from rear door, and one from dining room. The latter to be a floor push.

**ELECTRIC LIGHTING.**—All outlets to be wired for lighting by electricity, according to rules and regulations of the National Board of Fire Underwriters' Code, and to the approval of the local inspector.

To be a two-wire system and wires run in tubes. To be wired for 16 candle-power lamps.

To be a switch in first story hall to operate veranda, one to operate lower, and one for upper hall, one for dining and living room, one in passage to operate light at foot of cellar stairs, and one in second story hall to light lights in halls, both floors. All switches to be the best N. P. flush switch. To have all necessary cutout cabinets and circuits plainly marked thereon.

**LIGHTING FIXTURES.**—Furnish and connect to outlets shown, combination gas and electric fixtures with 16 candle-power lamps.



## DESIGN No. 8—Continued

### PAINTING.

Painter is to furnish all materials and labor to paint, and finish the work complete about the building. The painter is to consult the carpenter's specification for a detailed description of the work.

The color scheme for this house is as follows: the parts plastered outside to be a cement color, the trimmings to be a sage green, including the blinds; piazza floors to be a French gray, and piazza ceilings finished a natural wood color.

All the exterior finish to be painted two good coats of paint. No imperfections in wood to show when painted.

Outside of exterior doors to have a coat of shellac and two coats of varnish.

The veranda floors to be painted two coats of paint.

The ceiling of verandas to have a coat of shellac and a coat of varnish.

INTERIOR WORK.—The inside work must be in perfect condition before any finish is put on.

The birch floors in rear part to have a coat of oil, and one coat of Berry Bros.' liquid granite. The maple floors in vestibule, hall, living room, and den to have a coat of shellac and two coats of floor wax well rubbed and polished. The oak floor in dining room to have a coat of liquid filler, a coat of shellac and two coats of floor wax, well rubbed in and polished. The floors in second story and attic, to have two coats of a composition of varnish and wax. The floors of closets to have a coat of shellac and a coat of varnish.

The oak finish in dining room to have a coat of filler stained a little, two coats of shellac, and two coats of a standard make of varnish rubbed to a dull finish. The birch finish in living room and den to have a coat of mahogany stain, two coats of shellac and two coats of varnish, rubbed to a dull finish. The hall, first floor, to be finished in colonial style, with doors, treads and posts stained mahogany, same as specified for living room and rails, and other finish to have a good coat of liquid filler, and three coats of paint, the last one, left enamel gloss. The second story and attic to be painted three good coats of paint. The hard pine finish to have a coat of shellac and two coats of varnish, left even and smooth, with a gloss.

The doors and sash in cellar, laundry, and the cellar stairs to have two coats of paint.

The sash to have two coats of paint besides priming coat.

The walls of kitchen, pantry, both bathrooms, lavatories and entry, where plastered, to have a coat of sizing and two coats of paint.

All finished floors must be protected with paper, and no interior work done unless the building is kept warm.

### GAS FITTING.

The house to be piped for gas as per outlets marked, according to rules of gas light company. To be graded properly and fastened, leaving all ready to connect to meter.

### PLUMBING.

All work and materials to be furnished to complete the plumbing work according to regulations, and the plumbing inspector.

SOIL PIPE AND SEWER SUPPLY.—To be run of 6-in. tile sewer pipe from street to house; from there run a 4-in. cast iron soil pipe, to be continued to, and under fixtures. To have all necessary Ys, &c., to connect to the several fixtures.

WATER SUPPLY.—Run from street to inside of cellar wall the proper water pipe, with shut-off, inside, of wall.

VENTILATION.—All ventilating and back air pipes to be put in according to plumbing regulations of the city.

SINKS.—Kitchen sink to be 22 x 42 in. and 8 in. deep, of slate, with shelf at each end 1 ft. 4 in. long and have a 14-in. back of slate. To have a brass strainer outlet, and two arm faucets.

Pantry sink to be 16 x 24 in. enameled iron, with a slate back and end 14 in. high. To be fitted up same as kitchen sink.

LAUNDRY TUBS.—To be two part soapstone tubs, with soap dishes. Each tub to have two arm faucets.

WATER CLOSETS.—Closets in basement and attic bath room to be siphon wash down closets with tanks, seats, and covers, chains and pulls with bolts.

The closets in lavatories and bathroom, second floor, to be siphon jet closets, 1¼-in. plain oval seats, and covers attached, with nickel plated brass hinges. To have round cornered plain tanks, birch for first floor lavatory, and enameled white for second floor lavatory and bathroom. To have chains and pulls.

# DESIGN No. 8—Continued

LAVATORIES.—In first and second floor lavatories and bathroom, second floor, to be a lavatory with 20 x 24 in. slab, 12 x 15 in. bowl, and 12 in. back of porcelain enamel, with apron, and supported on concealed brackets. To have "Fuller" faucets, supply pipes, and stops. To have a lift waste.

In attic bathroom, to be a porcelain enamel lavatory, 18 x 20 in., with back 12 in. high, supported on brackets. To have chain and rubber stopper.

BATHTUBS.—In bathroom, second floor, to be a 5 ft. porcelain enameled bath, with flat bottom, and double bath cock and offset supply pipes, and "Imperial" waste.

In attic bathroom to be a 4½-ft. porcelain enameled bath, with double bath cocks, supply pipes and connected waste and overflow, and rubber stopper.

BOILER.—In closet off pantry to be a 30-gal. hot water boiler, with stand. To have all necessary pipes and connections complete. Exposed pipes to be on adjustable brass hangers, and to be brass where exposed.

TANK.—Put up in unfinished attic and line with 14-oz. copper, a 30-gal. tank To be supplied with water through best ½-in. iron size brass water pipe, ball cock and float, complete, and shut-off, in cellar.

SILL COCK.—Fit up on outside two ⅝-in. nickel plated flange and thimble hose bibb sill cocks, supplied with water through galvanized iron water pipe.

SUPPLY PIPES.—Sizes of pipe for supplies and wastes to conform to plumbing regulations.

## DETAILED ESTIMATE OF COST.

The following is the estimate of cost in detail, as presented by the author of this design:

EXCAVATING, FOUNDATION AND UNDERPINNING.	
361 yards excavating, at 30 cents.....	\$108.30
58½ yards concrete foundation, at \$6.....	351.00
154 face feet of concrete blocks, at 30 cents.....	46.20
Grading .....	45.00
	<hr/>
	\$550.50
MASON WORK.	
11 M. common brick, at \$12.....	\$132.00
Iron doors and thimbles.....	12.00
128 ft. flue lining, at 30 cents.....	38.40
Fireplace for hall.....	38.00
Fireplace for chamber.....	21.00
Tile work for living room fireplace.....	20.00
	<hr/>
	\$261.40

## PLASTERING WORK

18½ M. lath, at \$4.85.....	\$89.72
131 yards "Sacketts" plaster board, at 16 cents.....	20.96
131 yards outside plaster, at 60 cents.....	78.60
1,314 yards plastering, two-coat work, at 22 cents.....	289.08
Whitewashing cellar wall and posts.....	15.00
143 yards cement concrete, at 80 cents.....	114.40
	<hr/>
	\$607.76

## CARPENTER WORK.

18 M. spruce timber, at \$25.....	\$450.00
4 M. matched ⅞-in. hemlock, at \$25.....	100.00
3,700 ft. ⅞-in. hemlock for floors, at \$22.....	81.40
3,000 ft. matched spruce for roof, at \$25.....	75.00
Cellar entrance and steps.....	10.00
Cellar partitions and doors.....	25.00
Building paper .....	30.00
8 columns for beam supoprts, at \$1.25.....	10.00
Tin for flashing.....	20.00
25 squares Mathews unfading red slate, at \$7.....	175.00
196 ft. of tile floor, at \$1.....	196.00
1,100 ft. finish board, at 4 cents.....	44.00
6,600 ft. molding, at ¾ cent.....	49.50
810 ft. piazza flooring, at \$40.....	32.40
20 brackets, at \$1.75.....	35.00
88 small brackets, at 75 cents.....	66.00
3 sets of outside steps, at \$5.....	15.00
9 cellar frames and sash, at \$1.40.....	12.60
61 window frames, sash, glass, weights, &c., at \$6.15.....	375.15
2 outside door frames and doors.....	25.25
400 ft. birch flooring, at \$48.....	19.20
1,220 ft. maple flooring, at \$48.....	58.56
275 ft. oak flooring, at \$75.....	20.63
1,500 ft. hard pine flooring, at \$46.....	69.00
8 birch door finish, at \$1.35.....	10.80
12 birch window finish, at \$1.35.....	16.20
6 birch door jambs, at \$1.10.....	6.60
8 N. C. pine window finish, at \$1.25.....	10.00
9 N. C. pine door jambs, at 90 cents.....	8.10
8 N. C. pine doors, at \$2.75.....	22.00
40 whitewood door finish to paint, at \$1.50.....	60.00
26 whitewood window finish to paint, at \$1.50.....	39.00
24 whitewood door jambs, at \$1.....	24.00
24 whitewood doors, at \$3.....	72.00
12 whitewood and N. C. pine closet finish, at 50 cents.....	6.00
135 ft. of closet base, at 3 cents.....	4.05
5 birch doors, at \$4.50.....	22.50
1 vestibule birch door, at \$5.25.....	5.25
1 oak door finish.....	2.00
1 oak window finish.....	2.00
1 oak triple window finish.....	3.00
1 oak door jamb.....	2.50
1 oak and hard pine door.....	7.00
1 oak and birch sliding door, jamb and finish.....	20.00



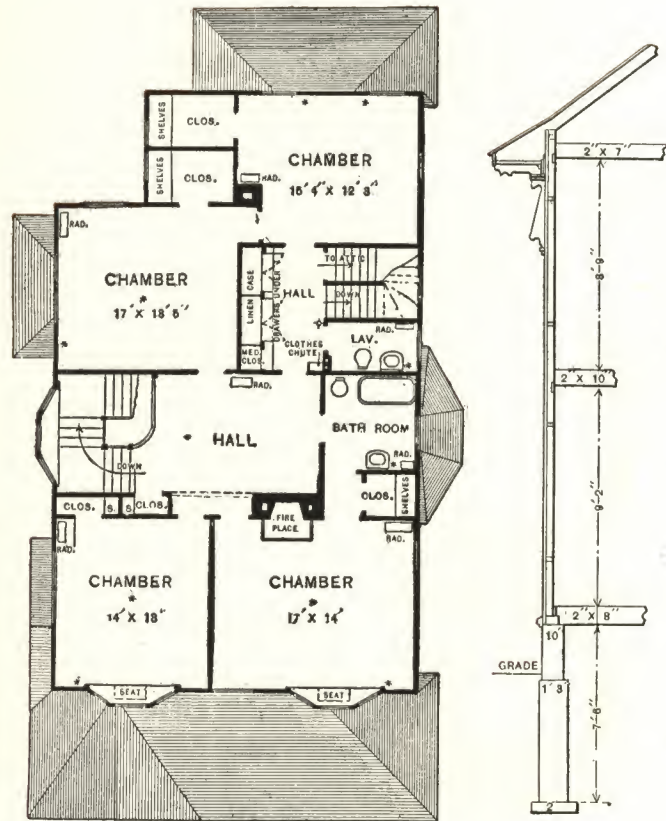
# DESIGN No. 8—Continued

1 oak china closet.....	20.00
14 N. C. pine door finish, at \$1.25.....	17.50
650 ft. 9-in. base, at 5 cents.....	32.50
220 ft. 2-in. base molding, at 2 cents.....	4.40
600 ft. sheathing, at 4½ cents.....	27.00
165 ft. sheathing cap, at 2½ cents.....	4.12
30 plate rail for den, at 4 cents.....	1.20
150 ft. cornice and picture molding for hall and living room, at 5 cents.....	7.50
Pantry shelves, doors, drawers, &c.....	28.00
240 ft. of oak paneling, at 40 cents.....	96.00
876 ft. oak molding for beaming, at 1⅛ cents.....	9.86
600 ft. oak plain stock for beaming, at \$75.....	45.00
Finish around sink and set tubs.....	10.00
Linen case.....	18.00
Medicine closet.....	7.00
Seat and bookcases in living room.....	45.00
Seat in dining room.....	10.00
2 seats in chambers, at \$6.....	12.00
Clothes chute.....	10.00
Front stairs, including seat.....	120.00
Rear and attic stairs.....	40.00
Cellar stairs.....	8.00

Mantel for living room.....	40.00
Nails.....	45.00
Hardware.....	100.00
Carpenter labor ... ..	1,050.00
	<hr/>
	\$4,145.77
Electric bells, wiring, &c.....	80.00
Lighting fixtures.....	100.00
Painting and finishing.....	325.00
Plumbing.....	810.00
Gas fitting.....	40.00
Wall and ceiling decorations.....	140.00
Heating apparatus.....	475.40
Profit.....	404.17
	<hr/>
Total.....	\$8,000.00

The rates of wages in the various lines are as follows: Laborers get \$1.75 a day; brick and plaster masons, \$4; carpenters, \$3; slaters, \$2.75; painters, \$2.80, and plumbers, \$4 a day.

# DESIGN No. 8

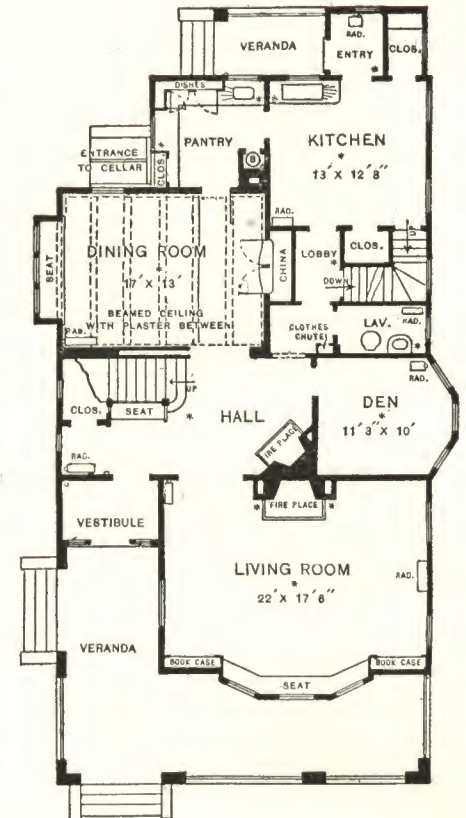


Second Floor.  
—Scale,  $\frac{1}{16}$  Inch to the Foot.



Front Elevation and Section.—Scale,  $\frac{1}{8}$  Inch to the Foot.

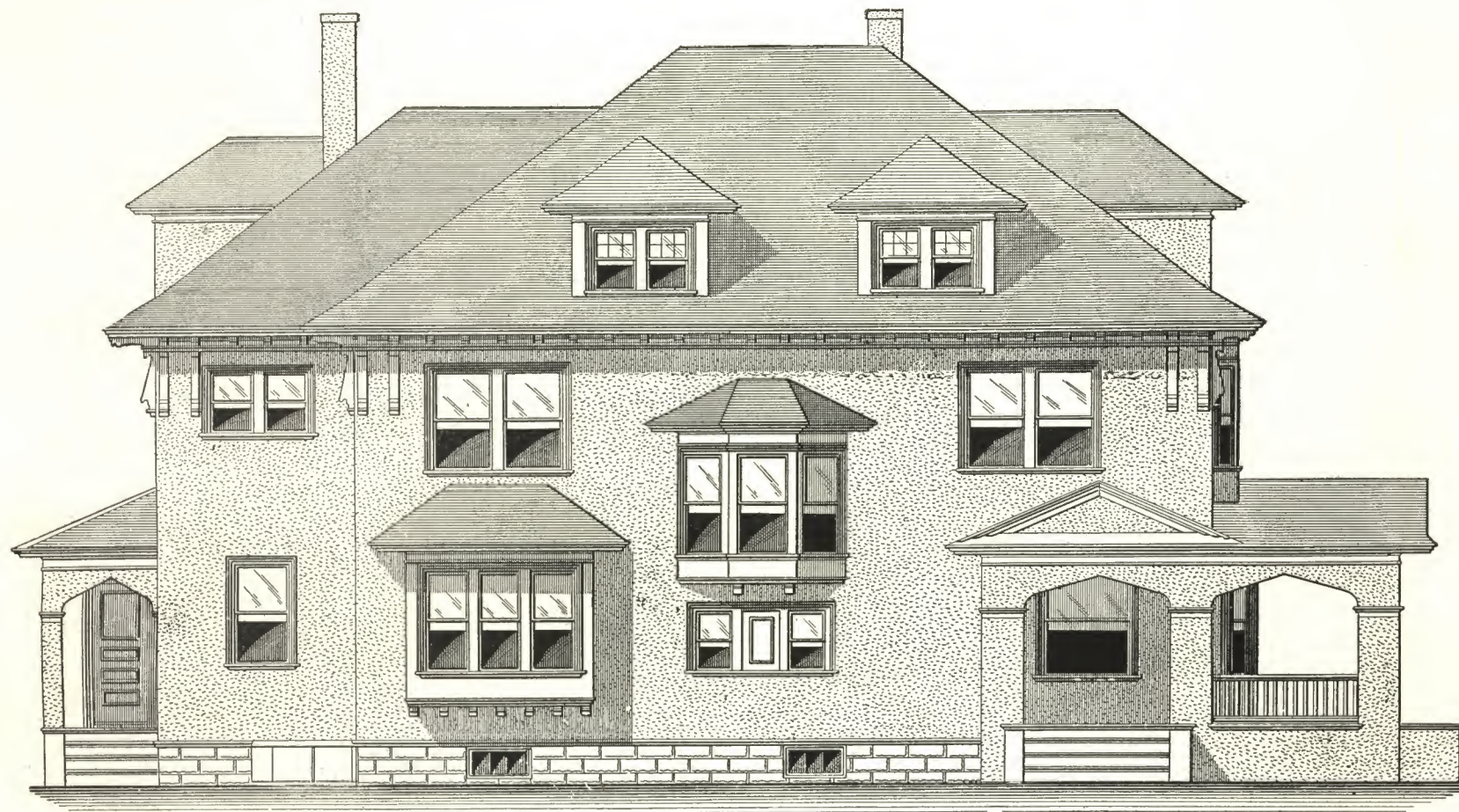
ARCHITECT;  
CHAS. H. KINGSTON,  
WORCESTER, MASS.



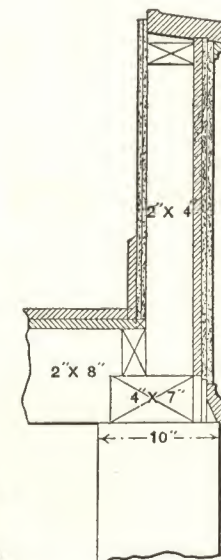
First Floor.  
Scale,  $\frac{1}{16}$  Inch to the Foot.



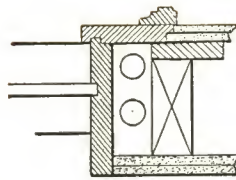
DESIGN No. 8



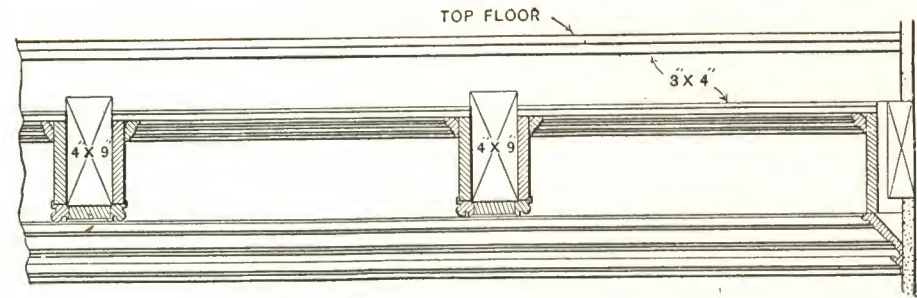
Side (Left) Elevation.—Scale,  $\frac{1}{8}$  Inch to the Foot.



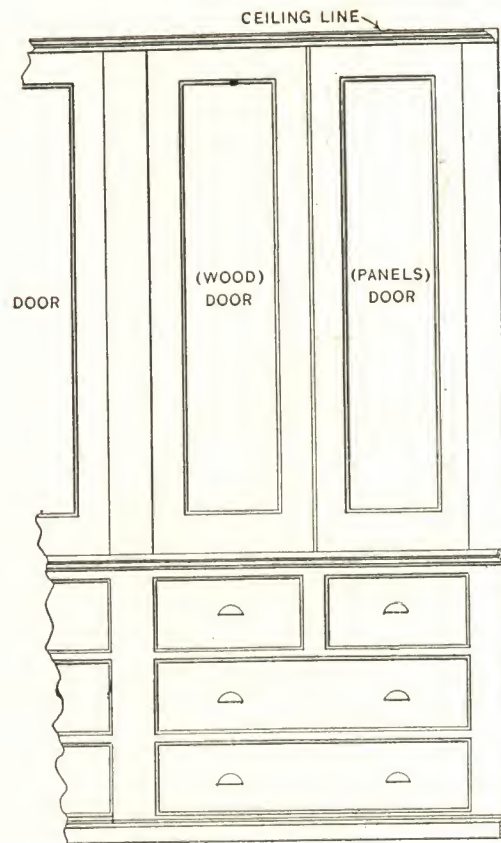
Detail of Water Table.  
—Scale,  $\frac{1}{4}$  Inch to the Foot.



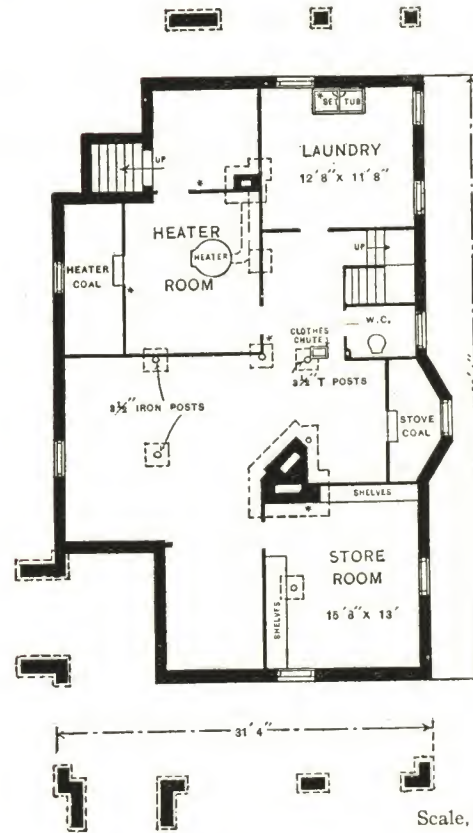
Horizontal Section through Window Frame.—Scale,  $\frac{1}{2}$  Inch to the Foot.



Section Showing Beam work of Dining Room Ceiling.—Scale,  $\frac{3}{4}$  Inch to the Foot.



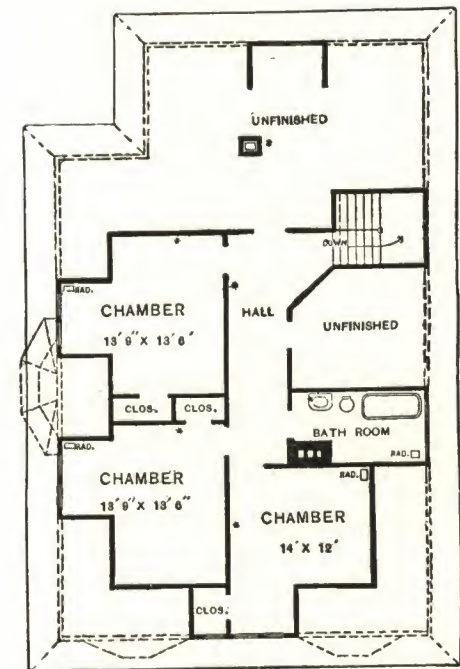
Partial Elevation of Linen Case on Second Floor.—Scale,  $\frac{1}{2}$  Inch to the Foot.



Foundation.

Scale,  $\frac{1}{16}$  Inch to the Foot.

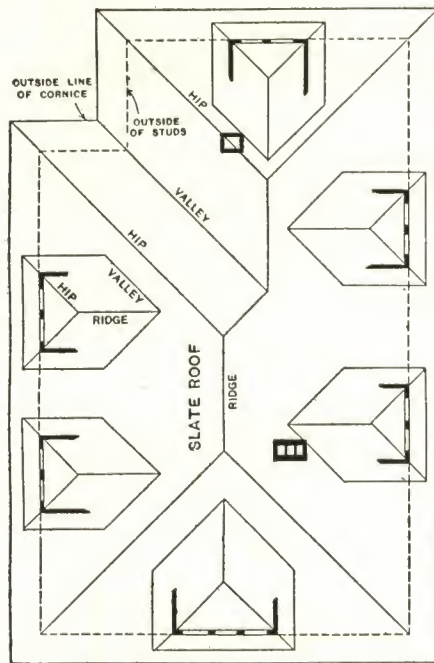
## DESIGN No. 8



Attic.



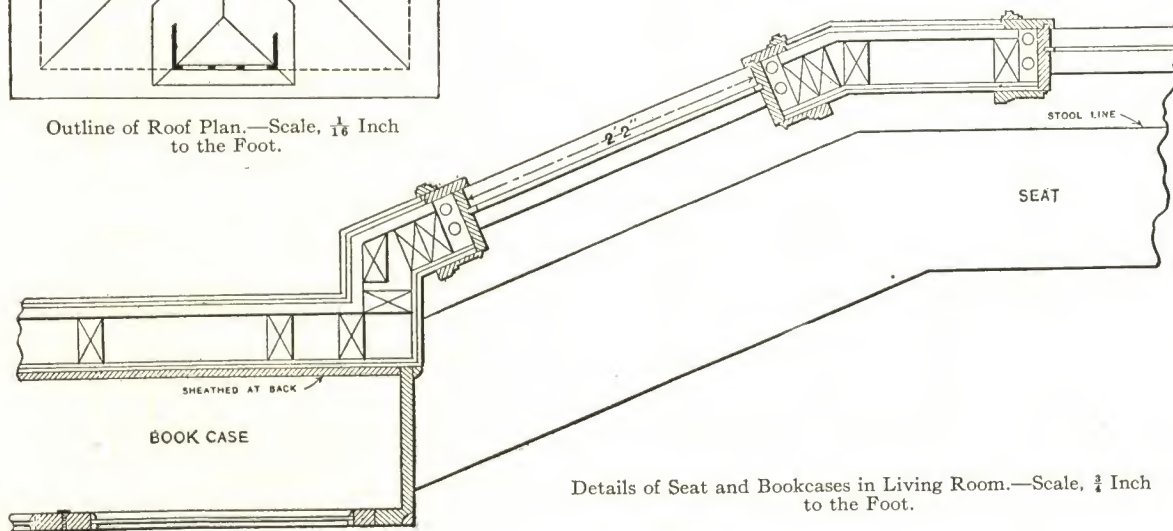
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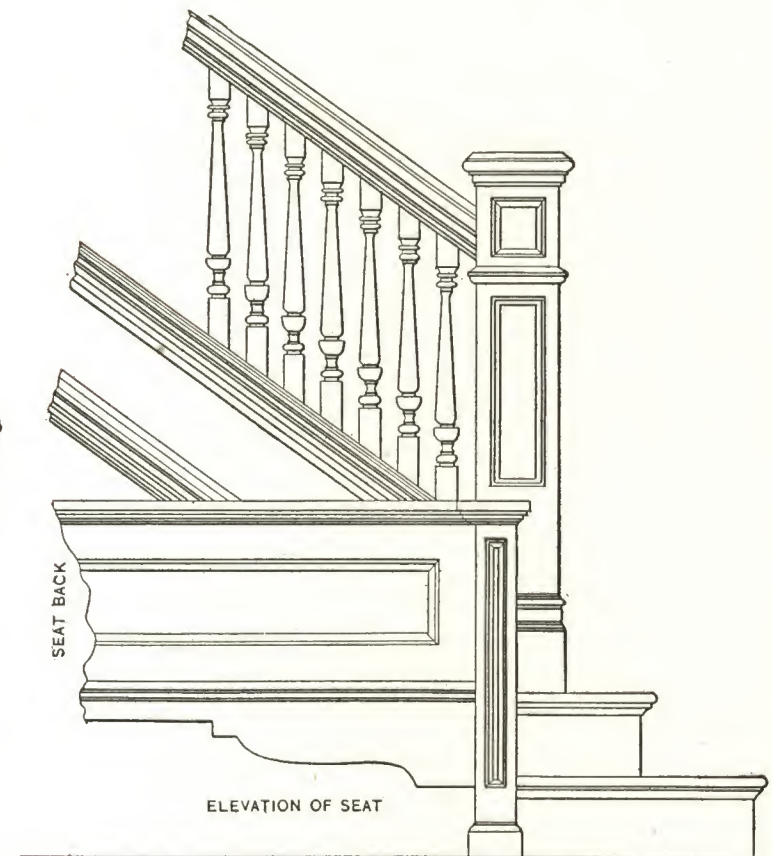
Outline of Roof Plan.—Scale,  $\frac{1}{16}$  Inch to the Foot.



Horizontal Section through Veranda Column.—Scale,  $\frac{3}{4}$  Inch to the Foot.



Details of Seat and Bookcases in Living Room.—Scale,  $\frac{3}{4}$  Inch to the Foot.



Detail of Front Staircase.—Scale,  $\frac{3}{4}$  Inch to the Foot.





# DESIGN No. 9

\$8000

WE present in this design the plans, elevations, and specifications of the parsonage of the First Unitarian Society, Milwaukee, which were drawn by Henry A. Betts of Milwaukee, Wis. The arrangement of rooms, stairs, halls, &c., is very good. The possibility of access from the first story to the attic without going through the main part of the building, is a very clever point. The compactness of the second story hall, and quick access to any and all rooms, the excellent closet room, and the clothes chute are all good features. One feature which could be differently arranged to advantage, is the cut-under for the front porch. The walls of the front rooms should extend straight out, and not be cut off at the corners. The rooms might be bettered thereby, and the porch would be just as effective.

## SPECIFICATIONS.

We present herewith the specifications, and estimate of cost accompanying the design in question.

## EXCAVATIONS AND MASON WORK.

Excavate the grounds for the basement according to the area of the plans and section 6 in. clear from face of wall and to the depth required by same. All earth from the excavation not required for leveling up around building, to be removed from premises.

Mason contractor is to take out and pay fees for street and water permit. Lay down foundations or footings of all walls, with large footing stone at least 6 in. thick, and 6 in. wider on each side than the walls they are to carry. Outside of all walls to be pointed up, and plastered wherever below ground, with cement mortar. Inside joints of all walls where not plastered, to be neatly pointed.

BRICK.—All brick used in the walls, except first-story facing, to be good hard, well burned local stock brick.

Walls of entire building above first-floor level will be veneered, faced, with gray shade sand lime brick for first story, and common local brick for balance, the latter to be laid with rough face to give key for cement plaster; chimneys to be faced with same brick as used for first story, and each flue to

have terra cotta flue lining and brick partition between each flue; chimney top of gray terra cotta to be provided for rear chimney, as shown.

PORCH FLOOR.—Porch floor to be paved with hydraulic pressed gray brick stock size, laid on edge in cement, herringbone pattern.

TILE FLOORS.—Floor of bathroom to be tiled upon foundation prepared by this contractor, on boards cut in between joist; similar foundation for vestibule floor; bathroom tile to be 2-in. hexagonal white vitreous tile, with 6-in. sanitary base at floor.

Vestibule floor to be ceramic mosaic tile.

CUT STONE.—All cut stone throughout to be the best quality Bedford limestone; hard blue for water table course, coping to porch inclosure buttress caps and door sills, and buff for balance, all stone to have dressed surfaces; sills of main part of building to be lug sills, to project 1½ in., and well throated to throw water clear of face of brickwork.

CEMENT WORK.—All around the inside of outside basement wall, run 3-in. porous drain tile, packed in coarse gravel and to drain into catch basin through opening made by plumber, tile to have regular pitch to catch basin, and be carefully laid. The earth in cellar to be leveled off and well tamped down. On this, place a 2-in. layer of cinders, then a 3-in. layer of concrete which shall be composed of three parts of broken stone, two parts clean sharp sand and one part Louisville cement, this to have top dressing of 1 in. thickness composed of equal parts clear sharp sand and "Atlas" Portland cement, all to be neatly troweled and floated down to a smooth and even surface, and to have fall to catch basin.

Building is about 35 ft. from street line. A 5-ft. walk to be run from street walk to front entrance, and a 3-ft. walk to be provided from street to side entrance.

Steps to porch to be cement, with recessed face. Cement foundation for brick paving of porch floor.

PLASTERING.—All plastering except as otherwise specified to be two-coat work, the last coat to be the best style of sand float finish.

First and second stories plastered throughout; the two rooms, halls, closets and stairs of attic to be plastered; laundry and inside stair to same, to be plastered, and remainder of basement ceiling to have one coat. Partition



## DESIGN No. 9—Continued

side to unfinished part of attic to have one coat. Bathroom and kitchen to have Adamant plaster wainscoting 5 ft. high in bathroom, and 4 ft. 6 in. high in kitchen, marked out to represent tile.

EXTERIOR PLASTERING.—The whole of the second story from the top of the first-story window caps, to be plastered with cement mortar, three-coat work, the last coat to be rough cast.

Plastering to be done directly on brick veneering, except for the three principal gables, which are to be lathed with wood lath to receive plaster; last coat to be put on after timber quarters are in place.

Gables to be back plastered.

IRONWORK.—Steel angle iron lintels to be provided for second-story windows,  $4 \times 3\frac{1}{2} \times \frac{3}{8}$  in. for single windows, and  $5 \times 4 \times \frac{3}{8}$  in. for wider windows and first-story triple window; these are to carry outer 4 in. of brickwork only;  $6 \times 4 \times \frac{3}{8}$  in. angle over stair window. A 7-in. I-beam, 15 lb., to be provided to carry wall above dining room bay, and same size and weight beam for all above pantries, and an 8-in. I-beam,  $17\frac{3}{4}$  lb., to carry wall above front porch, bearing plates, to be provided at each end and on pier.

### CARPENTER AND JOINER'S WORK.

All timbers, girders, trimmers, joist, truss beam partitions, stud rafters, and all piece stuff to consist of good merchantable seasoned pine, and must be prepared, framed, and constructed according to the drawings and sections.

First-floor joist .....	$2 \times 12$ in., set 16 in. on centers.
Second-floor joist .....	$2 \times 10$ in., set 16 in. on centers.
Third-floor joist .....	$2 \times 8$ in., set 16 in. on centers.
Ceiling joist .....	$2 \times 6$ in., set 16 in. on centers.
Rafters .....	$2 \times 5$ in., set 16 in. on centers.
Outside studs .....	$2 \times 6$ in., set 16 in. on centers.
Inside and gable studs.....	$2 \times 4$ in., set 16 in. on centers.
Valley rafters .....	$2 \times 8$ in., double thick.
False rafters .....	$3 \times 6$ in.

All the second and third-story joist over 14-ft. bearings to be set 12-in. centers. Joist to be bridged with  $1\frac{1}{8} \times 3$ -in. stuff, well fitted at angles.

Cut in, boarding between joist for concrete foundation where tile floors are specified.

Lintels to be provided over all openings in outside walls, wide openings, trussed.

South and west gables to be prepared for back plastering; north, south, and west gables to be furred on face of sheathing for plaster.

ROOF.—The carpenter is to frame and construct roofs according to the drawings and specifications, and board the same with dry No. 1, M. & D. fencing, and cover with slater's heavy felt.

Cover the entire roofs with best quality extra \*A\* cedar shingles, laid  $4\frac{1}{2}$  in. to the weather, every fifth course on front and south sides, double. Deck to be constructed of  $2 \times 8$  in. joist, properly pitched to rear, and covered with matched fencing to receive tin.

WINDOWS.—All wood frames that show when finished, will be of second clear pine, pulley stiles  $\frac{7}{8}$  in. thick and blind stops  $\frac{7}{8}$  in. thick, parting strips  $\frac{1}{2}$  in. thick, and sash stops  $\frac{1}{2}$  in. molded on the inside. All sash to be first clear pine  $1\frac{3}{4}$  in. thick. Sills to be  $1\frac{3}{4}$  in. thick and laid 2-in. bevel per foot; casings  $1\frac{1}{8}$  in. all molded as detailed. All window stops to be secured with round headed screws every 15 in. Upper sash of gable and dormer windows to have tracery in upper portion, as shown; mullion windows with sash to slide up behind transom bar; triple windows to have the two outside sash slide only, all according to details.

### OUTSIDE FINISH.

Wood quartering in gables to be  $1\frac{1}{4}$  in. thick, width as shown, back edges to be splayed or rebated to give key for plaster; belt course above first-story windows  $\frac{7}{8}$  in. thick, with mold above, all to details.

Verge boards to be of  $1\frac{3}{4}$ -in. stuff rebated and molded, as shown; to have pendants at apex, and brackets at feet, brackets supporting hood over bay, spandrels filled with ceiling.

All outside woodwork of cypress.

FLOORS.—The floors of reception room, hall, dining room, and parlor, to be white oak, well matched even color, and end matched; remainder of floors throughout to be No. 2, "Perfection" maple, selected as to color for the different rooms: in no case must a light and dark strip be laid side by side; hardwood floors to be  $\frac{7}{8} \times 2\frac{1}{2}$  in.

Unfinished part of attic to be floored with No. 2, M. & D. fencing.

Line the floor joist of first and second stories with well dressed 6-in. wide common flooring boards, laid diagonal, and covered with heavy Eureka deafening felt, turned up 3 in. around walls behind baseboard.



## DESIGN No. 9—Continued

### INSIDE FINISH.

The whole of first floor, with the exception of kitchen pantries, rear stair hall, and side entrance way, to be finished in white oak of good grain and even color; remainder of finish, except in basement, of clear cypress, for oil finish; no finish in basement except laundry, which is to be No. 2 pine for painting. The casings throughout to be  $4\frac{3}{4}$  in. wide, with band mold on outer edge, head casing to run through; in no case are they to be mitered. Base to be 9-in. high, with molded top and shoe strip at floor. Windows to have the usual stool and apron finish, except where otherwise shown or described;  $2\frac{1}{2}$ -in. mold to be provided above plaster wainscoting in kitchen and bathroom. Reception and dining rooms to have box beams on ceiling, with  $\frac{1}{2}$  beam around walls, as indicated by dotted lines on floor plan; picture mold directly below same around walls. Other first-story rooms to have light wood cornice at ceiling, with picture mold immediately below same; similar cornice in vestibule. Small cased opening to be provided on first and second floors to clothes chute, in angle of rear stair, and to be fitted with small paneled door. A  $1\frac{3}{4}$ -in. diameter curtain pole to be provided for coat closet opening. First-story hall and vestibule to be wainscoted to height shown, with neat molded cap and neck mold, with base and shoe strip at floor; wainscoting of plain boards, alternating wide and narrow strips, with sunk channel joints. Dining room wainscoting paneled as shown, with plate shelf forming cap.

Plain bookcases to be provided, and set upon east wall of study, as shown by sketch and details. Seats also to be provided in study at side recesses of mantel, with two plain sawn and chamfered ends out of  $1\frac{1}{2}$ -in. stuff.

All flat faces of finish to be machine polished, molded work, hand finished.

CLOSETS AND PRESSES.—All presses and closets to be finished up with proper shelves to each one, and a  $\frac{7}{8} \times 4$  in. molded strip extending around the room with suitable clothes hooks every 8 in., and drawers where shown.

Pantry to have counter shelf on each side, inclosed below with paneled dwarf doors; drawers and flour bin as shown; above counter shelf to have five shelves on movable cleats.

China closet will have paneled doors below, drawers and sash doors on top, and a neat ornamental top finish, as per sketch; shelves on movable

cleats, small cupboard to be provided where shown in butler's pantry for table leaves, with paneled door.

LINEN CLOSET.—Linen closet near bathroom to have drawers below, and shelves inclosed by plainly paneled folding doors, with neat cap mold above.

CLOTHES CHUTE.—Of bright tin, in tinner's contract, but to have opening at each floor as described.

MEDICINE CASE.—Recessed medicine case in bathroom above bowl, as shown, with movable shelves, neat cap mold and door prepared for glass mirror with wood backing.

DOORS AND FRAMES.—All doors in this building to be made of the best clear cypress (except where otherwise specified), thoroughly seasoned and kiln dried.

Outside door frames to be  $1\frac{3}{4}$  in., with rebated jambs; oak, for front door. Inside jambs  $1\frac{1}{8}$  in. thick, with  $\frac{1}{2}$ -in. thick molded stops.

All doors over 7 ft. high, to be hung with three butts.

Sliding doors hung with Lutink's patent hangers; all stops fastened with round headed screws, every 15 in.

Outside front entrance door to be  $2\frac{1}{4}$  in. thick; vestibule and all other doors where hardwood finish is used to be  $1\frac{3}{4}$  in. thick, veneered both sides to correspond with finish; all other doors throughout to be  $1\frac{3}{8}$  in. thick five-cross panel stock doors.

Outside side entrance door, also kitchen entrance door, to be  $1\frac{3}{4}$  in. thick, also door at foot of basement stairs.

Provide and hang complete an oak screen door of approved design at front entrance; also one of pine at side entrance.

STAIRS.—Main stairs to be, as shown by drawings, all of white oak, treads  $1\frac{3}{8}$  in. thick, risers  $\frac{7}{8}$  in.; stringers  $1\frac{1}{8}$  in.; newel posts to have neatly molded caps and base, as shown on scale drawing; four plain balusters to a tread, set in groups; molded handrail out of  $3 \times 4$  in., open stringers with molded edge and paneled bracket, and stringpiece below.

Rear stairs to be of cypress, with  $1\frac{1}{8}$ -in. oak treads, and cypress risers, with three  $1\frac{3}{8}$ -in. plain balusters to a tread.

Steps from rear entrance up to kitchen to have  $1\frac{3}{8}$ -in. maple treads. All closed stairs to have  $1\frac{3}{8}$ -in. diameter hard wood handrail on brackets.

HARDWARE TRIMMINGS.—Contractor will estimate the sum of \$75 for all locks, bolts, butts, knobs, latches, sash locks, &c., the owner to select



## DESIGN No. 9—Continued

and furnish same at the building, contractor to deduct above sum if furnished by owners. The contractor to furnish all sliding door hangers, sash weights and cords, pulleys, nails, &c., exclusive of the above mentioned trimmings.

SUNDRIES.—Preserve cupboards in basement of M. & D. fencing, 5 ft. high, carried up to ceiling, with mold at top and folding doors, shelves about 15 in. apart.

### TIN WORK.

All tin used to be Taylor's IX Old Style redipped plates.

Deck of main roof and rear second-story balcony to be tinned, plates to be 14 x 20 in., each put on with four cleats, well nailed, and to have flat seams heavily soldered, using 7 to 8 lb. to 100 sq. ft. of roof; roof to be lined with Watson's waterproof paper, laid to lap at least 2 in.

Tin ventilating pipe to be taken from bathroom, with nickel plated register face near floor, pipe carried up through roof, and capped with approved up draft ventilator.

A 12-in. diameter bright tin pipe to be provided and put in place for chute from second story to basement; pipe to have opening at each floor, carefully dressed to woodwork, and securely sacked.

GUTTERS, ETC.—Double galvanized iron gutter, hung level and graded inside, to be provided for all eaves; it must be securely fixed in position, and accurately graded to outlets or conductors, which will be in number, as shown, 3 x 4 in. of corrugated galvanized iron, put upon iron hooks or straps and connected into sewer at points shown.

### FURNACE HEATING, &c.

The furnace to be portable, with double casing, set on a brick foundation, complete with all connections, firing tools, galvanized iron smoke pipe, with dampers, &c.; the furnace to be of ample size to heat the entire building to 70 degrees in the coldest winter weather.

Water back to be provided, and put in position in furnace ready for connection to hot water boiler, which will be made by plumber.

Hot air pipes will be double thick, of bright tin, and of ample size to heat rooms, and will be fixed securely in place with all elbows, boxes, plastering rings, &c., complete. All registers will be furnished by the furnace contractor, those in first story, except kitchen, to be nickel plated, and those in floors to have frames.

### ELECTRIC WORK.

The building to be wired for electric light in the most approved manner (embodying all the rules and regulations of the National Board of Fire Underwriters), with all necessary switches, cut outs, &c., required; switches to be within easy reach on side walls for all ceiling lights; they are to be the Hart flush push button type, plates to be dull brass finish.

The feed wires shall run from most convenient point for service to enter building, carried to a central distributing box on the second floor where directed, with meter loop in basement; from distributing cabinet run feeds to all points marked on plans thus\*. All wire used must be high grade rubber covered and braided; the rubber must be soft and pliable, and the wire 98 per cent. copper, and not show fracture when bent sharply at an angle of 180 degrees; all wire must be run on porcelain cleats or knobs, so as not to come in contact with any part of building, or run in tubes or circular loom.

A first-class job in every respect must be guaranteed, subject to the approval of the local Board of Fire Underwriters.

Cabinet at distributing point to be provided by this contractor to correspond with finish, furnished and finished complete.

Speaking tube to be provided from rear hall to attic, with mouthpieces and whistle signals, in first and second story halls, and in laundry.

Provide electric bell from front door to kitchen, also side door to kitchen, and from dining room floor to ring buzzer in kitchen, with floor plate and cord attachment; indicator to be placed within easy reach in kitchen. Provide suitable open circuit wet batteries, and run best insulated wire for all bells. All to be warranted for one year from completion.

### PAINTERS' AND GLAZIERS' WORK.

Roof shingles to be stained twice in Cabot's creosote shingle stain, colors as directed; dipped three-quarters their length for the first coat, and second applied with a brush.

All exterior woodwork, including window frames and sash, to have two coats of Cabot's stain, color a rich brown. All other woodwork not otherwise specified, also ironwork, to be painted three coats; metalwork and metal roofs to have first coat of best mineral paint, and the others of best lead and oil.

All dressed woodwork in basement, (except coal bins) and in unfinished



## DESIGN No. 9—Continued

portion of attic, to be painted two coats. Hall wainscoting to have coat of mineral paint on back before it is put up.

Plaster tile wainscoting to have two coats oil paint, and two coats Porcelite. Bathtub to be well scraped, rubbed down and painted to correspond.

Burlap (Fab-ri-ko-na) to be furnished, and put up by painter, forming panels of dining room wainscoting.

All walls and ceilings of first and second stories, including attic rooms and hall, to be tinted in colors selected.

FINISH OF HARDWOOD.—All oak floors in the building to be well filled and finished in the best manner, with one coat filler, and two coats best hard oil finish, equal to Pratt & Lambert's best floor finish; last coat to be well rubbed down with pumicestone and oil.

First-story hardwood finish, including staircase, to be finished with Chicago Varnish Company's No. 253 Pollard oak wood tint, one coat No. 20 surfacer, and one coat of dead lac.

All cypress finish will be finished in natural color, with one coat white shellac and two good coats Pratt & Lambert's No. 31 preservative; last coat to be rubbed to a dull finish in second story and study. Maple floors will have two coats oil, well rubbed.

GLASS AND GLAZING.—All glass for building will be of the best AA double thick American (unless otherwise specified).

All lights marked P. G. on elevations will be of best polished American plate. Those marked B. P. to be best bevel plate.

All lights marked Ld. G. will be leaded glass.

### PLUMBING WORK, &c.

All drain pipes on inside of building and to point 5 ft. outside of same, to be extra heavy cast iron. Provide main drain with a running hand hole trap where directed, with 4-in. opening, and a fresh air pipe 2 in. in diameter, extending to surface of ground.

All traps to be back vented. Build catch basin where shown on basement plan, 18 in. in diameter, of clay pipe, 3 ft. deep, bottom of hard clinker brick, laid and plastered in cement, watertight. The outlet pipe or drain to be a quarter bend, extending down within 1 ft. of the bottom. The cover to be iron.

WATER SUPPLY.—Water supply to be taken from main in street, and 1-in. diameter extra heavy lead pipe taken into building, with stop cock and box at curb supply, continued as far as hot water boiler full size, with  $\frac{5}{8}$ -in. branches to washtubs, sinks, water closets, and bathtub, and  $\frac{1}{2}$ -in. branches to slop sinks, and wash basins; hot water supply from boiler to fixtures to be of same size as for cold water, and extended to all sinks, slop sinks, washbowls, washtubs, and bathtub, but to be of galvanized iron pipe.

Iron street washer in front and rear to be brought through window frame, with  $\frac{3}{4}$ -in. galvanized wrought iron pipe and hose coupling connection complete, with detachable handle faucet.

WATER METER.—Plumber must furnish and have set in place, a 1-in. disk water meter of approved make.

SAFING.—All horizontal supply soil and waste pipes above first floor, to be run in lead lined troughs, having a separate waste. All perpendicular supply pipes coming up in partitions, to be incased in lead lined boxes.

WASHTUBS.—Provide and place in laundry where shown, a two-part laundry tray, with painted legs, and 12-in. high back, all Alberene ware.

SINKS.—Cast iron white enamel sink in kitchen 20 x 40 in., with 15-in. high roll edge back, sink and back all in one piece; brackets to support sink. Slop sink in laundry 16 x 16 in. Platform for icebox at kitchen door to have small lead lined sink, with waste from same to slop sink in laundry.

HOT WATER BOILER.—Furnish and set in place a galvanized iron boiler, dome head, to hold 40 gal., set on cast iron standard; boiler to be connected with water back in furnace which is supplied by heating contractor; a Lawson gas heater, with copper jacket, also to be attached to boiler for summer use.

WATER CLOSETS.—Furnish and set in place in bathroom, a plain siphon jet bowl, vitreous ware, with copper lined mahogany tank, seat and cover; flush and supply pipes nickel plated, with stop cock in supply. Basement closet to be earthen hopper, with copper lined oak tank, seat and cover.

BATHTUB.—The bathtub shown on plan to be a 5-ft. white enamel 3-in. full roll rim tub, provided with combination bibbs, rubber tube and sprinkler. Supplies and all trimmings nickel plated on brass.

WASH BASINS.—Washbowl in bathroom to be a one-piece cast iron white enamel all over lavatory, 20 x 24 in., with model waste and nickel plated supply pipes and trap to wall, lavatory to have apron all around. Lavatory in rear hall to be enameled iron, with N. P. brass soap tray, plug, chain stay and enameled brackets, slab 20 x 24 in.; height of back, 10 in.

# DESIGN No. 9—Continued

TRIMMINGS.—All the trimmings to fixtures to be best style of Fuller's patent work, brass for kitchen sink, wash trays and slop sink, and nickel plated for the balance of the work. All plumbing to be neat open work.

GAS FITTING.—Use best wrought iron gas pipe of the various sizes required; commence the main service at meter set in front of cellar; supply all places marked by a \*.

Run separate gas pipes for fuel gas to range in kitchen and each fireplace, also to hot water boiler for gas heater.

## COLOR SCHEME.

First story gray brick, laid Flemish bond, with slightly darker header, mortar joint little darker than header.

Second story and gables, fine texture rough cast, natural color of cement, greenish gray.

Woodwork rich oak brown, including window frames and sash (stained). Roof stained moss green.

## ESTIMATE OF COST.

The estimate of cost furnished by the author of the design is as follows:

MASON WORK .....	\$1,535.00
Masons, 55 cents per hour.	
Laborers, 27 cents per hour.	
Sand lime face brick, \$12.50 per 1000; laying, \$8 per 1000.	
Common brick, \$6.50 per 1000; laying, \$5.50 per 1000.	
Excavating included in mason work.	
Excavating and hauling per yard, 80 cents.	
CUT STONE .....	338.00
Stone, 40 cents per cubic foot.	
CEMENT WORK .....	234.38
Walks, 14 cents per square foot.	
Basement floor, 10 cents.	
Veranda platform, 40 cents.	
Steps, 60 cents per linear foot.	
Labor, 27½ cents.	

TILE WORK .....	56.60
Bathroom floor, 31 cents per square foot.	
Sanitary base, 40 cents per linear foot.	
Vestibule floor, 60 cents per square foot.	
LATHING AND PLASTERING.....	589.00
Exterior plastering on brick, 80 cents per yard.	
Exterior plastering on lath, \$1 per yard.	
Interior lathing and plastering, 28 cents per yard.	
Plasterer, 50 cents per hour.	
Laborer, 30 cents per hour.	
CARPENTER AND JOINERS' WORK, INCLUDING MILLWORK.....	3,730.00
Millwork, \$1.261.	
Carpenters, 35 to 37½ cents per hour.	
TINSMITHS' WORK .....	105.00
Tinners, 35 cents per hour.	
IRONWORK .....	43.50
Ironworkers, 40 cents per hour.	
ELECTRIC WIRING, SPEAKING TUBES AND BELLS.....	91.00
Electrician, 37 cents per hour.	
FURNACE WORK, &C.....	200.00
Labor, 35 cents per hour.	
PAINTING AND FINISHING, INCLUDING GLAZING.....	345.00
Painters, from 35 to 40 cents per hour.	
GLASS AND DELIVERING.....	72.00
LEADED GLASS, DELIVERING.....	63.77
PLUMBING AND GAS FITTING.....	535.00
Iron sewer, \$1.35 per linear foot.	
Plumbers, \$4 per day.	
TOTAL.....	\$7,938.25



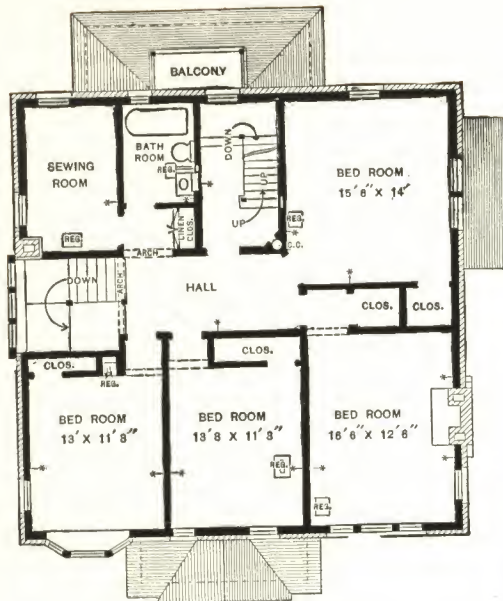


A Brick-veneered Residence in Half-timber Effects.  
HENRY A. BETTS, ARCHITECT.

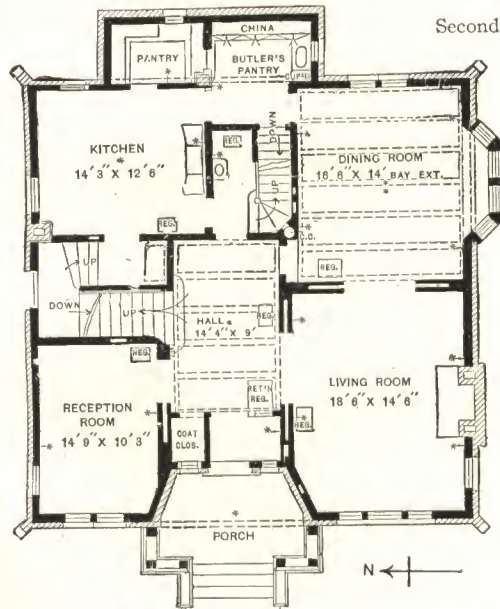




DESIGN No. 9



Second Floor.—Scale,  $\frac{1}{16}$  Inch to the Foot.



Main or First Floor.—Scale,  $\frac{1}{16}$  Inch to the Foot.

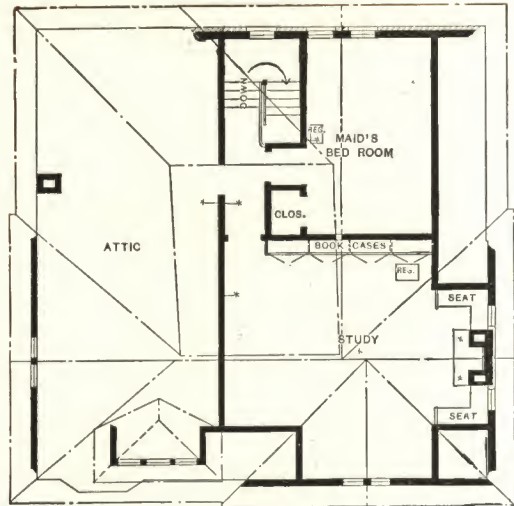
ARCHITECT:  
HENRY A. BETTS,  
MILWAUKEE, WIS.



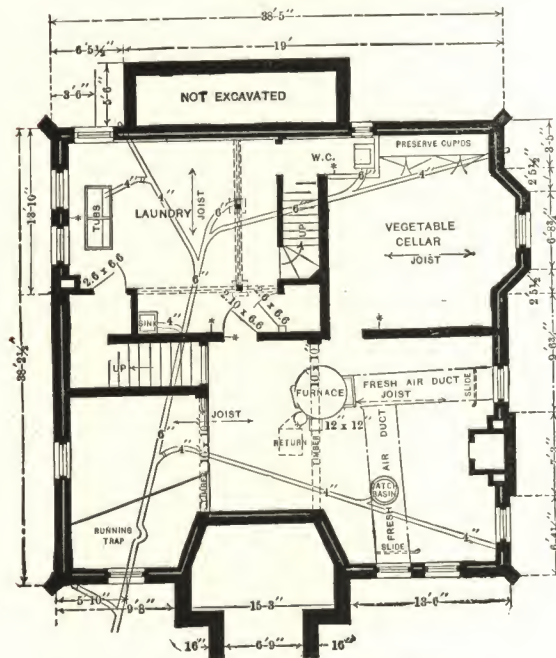
Front Elevation.—Scale,  $\frac{1}{8}$  Inch to the Foot.



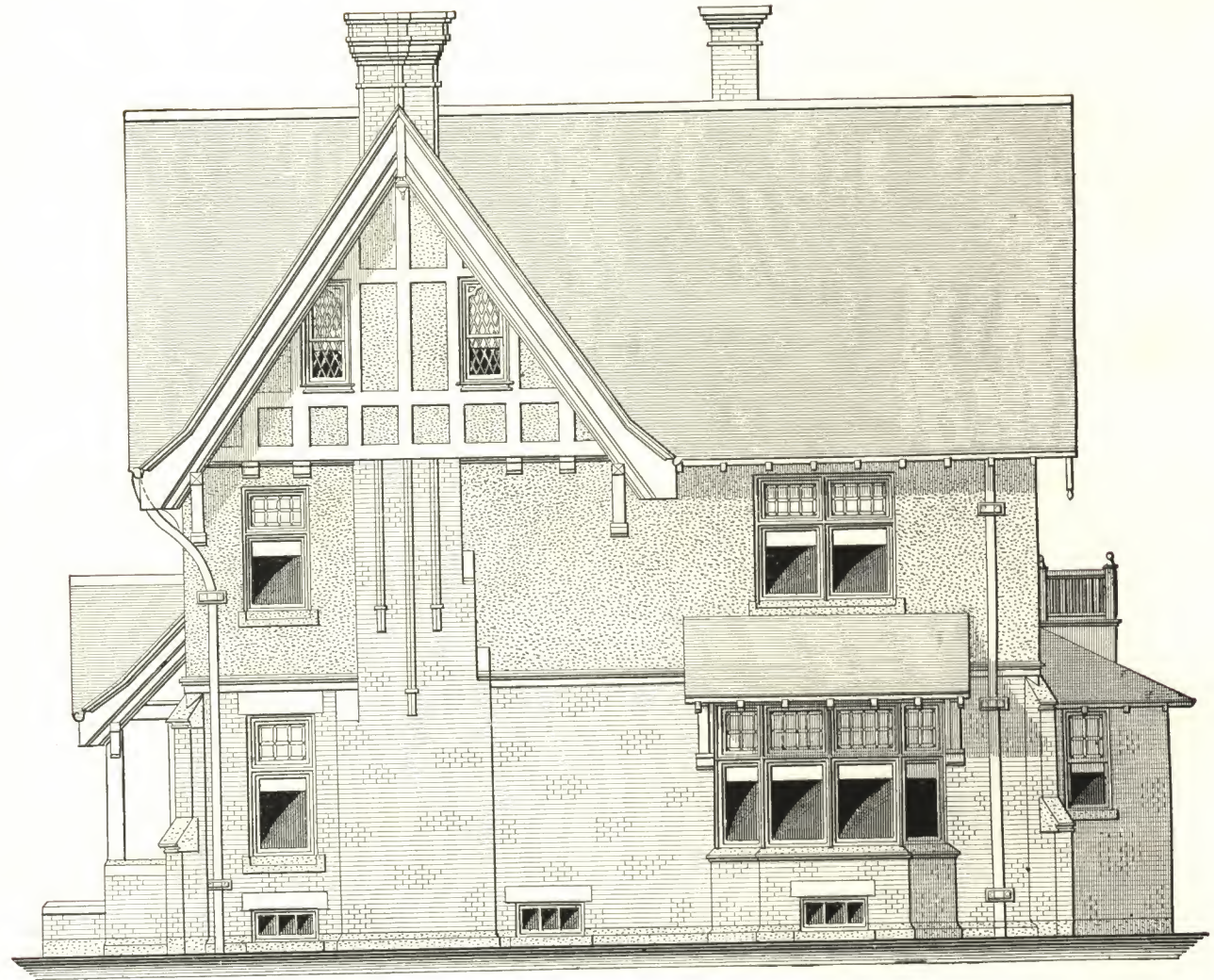
DESIGN No. 9



Attic and Roof Plan.



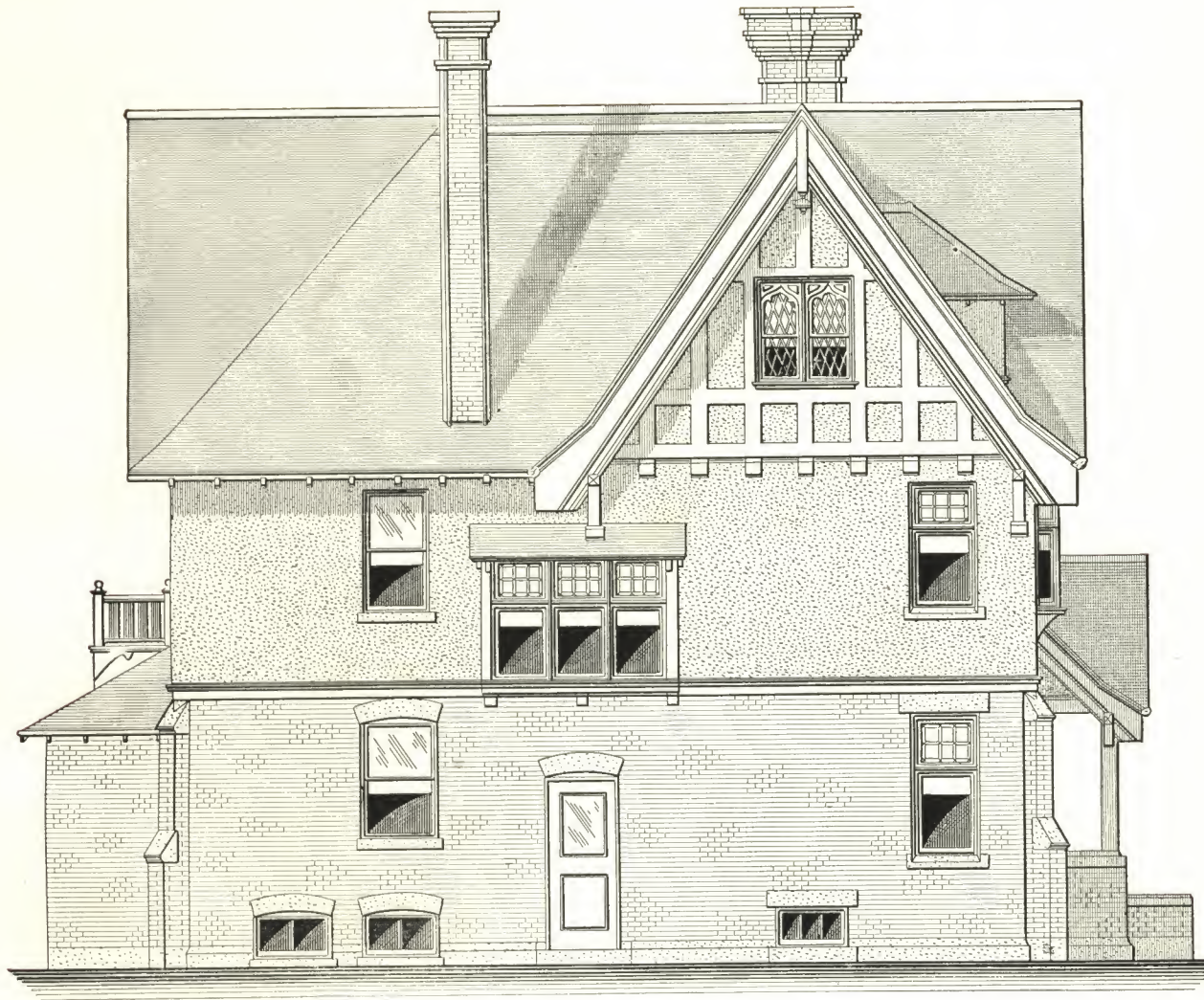
Foundation.—Scale,  $\frac{1}{16}$  Inch to the Foot.



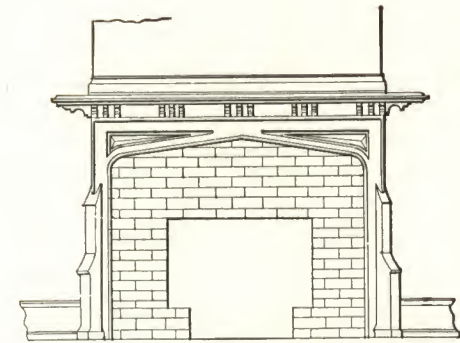
South Side (Right) Elevation.—Scale,  $\frac{1}{8}$  Inch to the Foot.



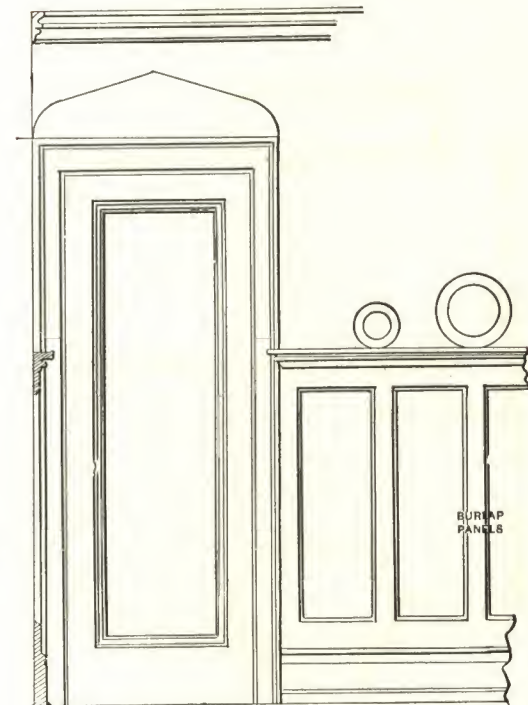
DESIGN No. 9



North Side (Left) Elevation.—Scale,  $\frac{1}{8}$  Inch to the Foot.



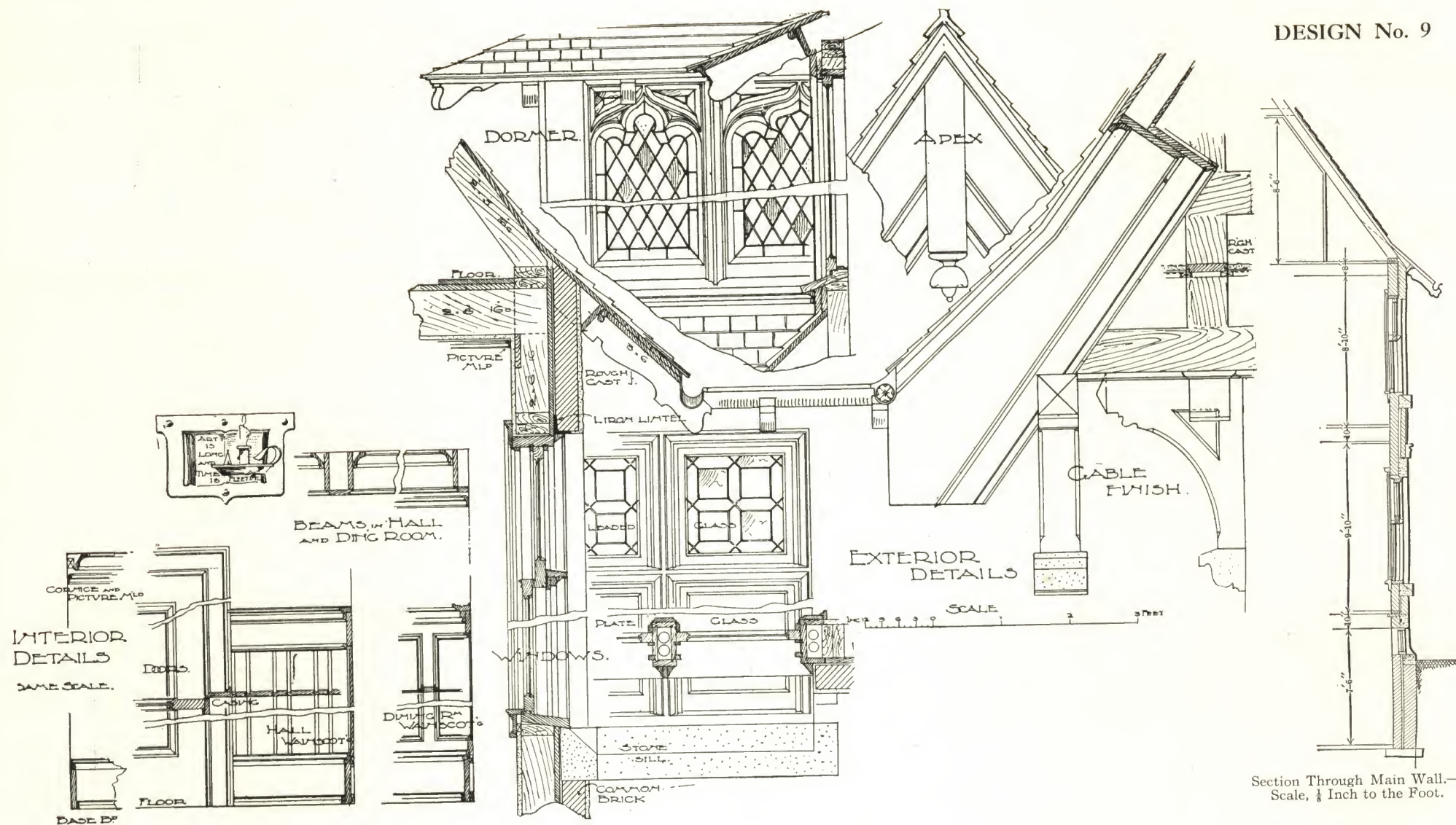
Elevation of Mantel in Living Room.—Scale,  $\frac{1}{4}$  Inch to the Foot.



Dining Room Finish.—Scale,  $\frac{3}{8}$  Inch to the Foot.



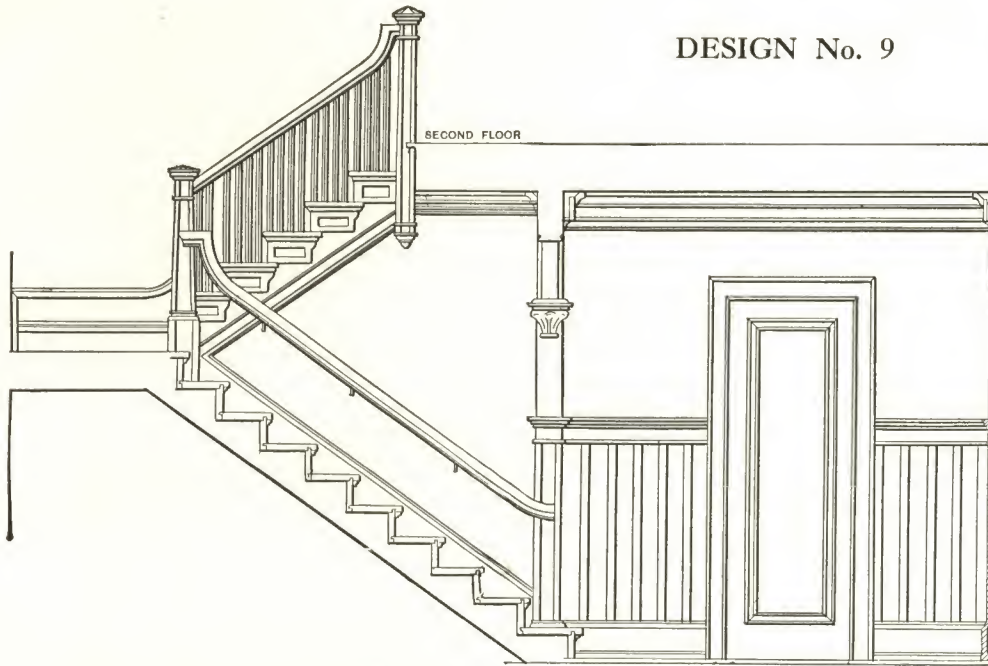
# DESIGN No. 9



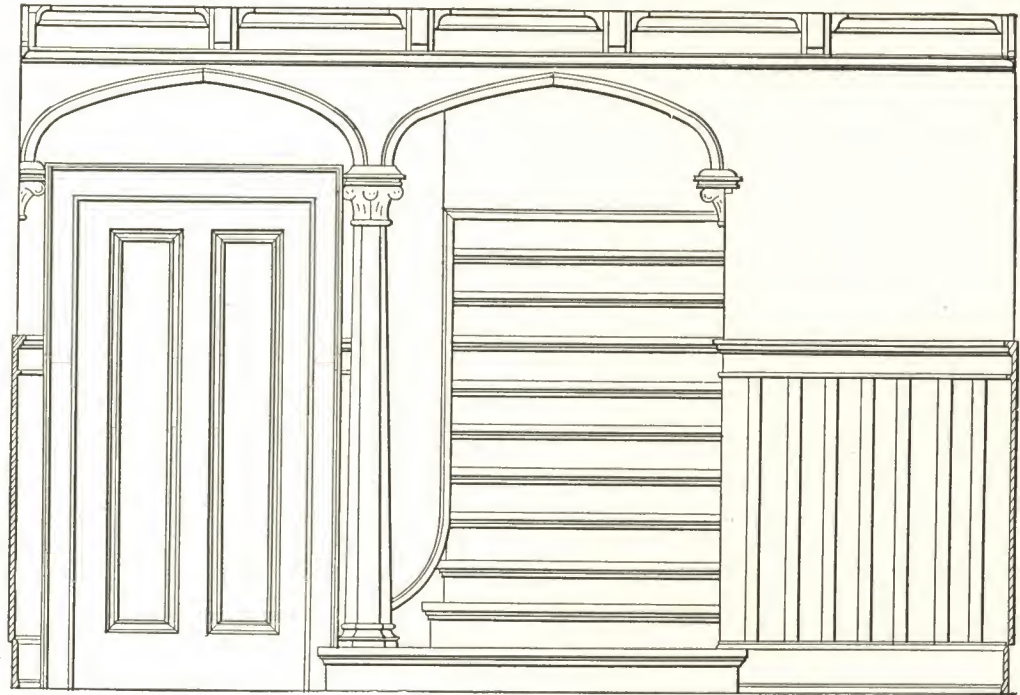
Section Through Main Wall.—  
Scale,  $\frac{1}{8}$  Inch to the Foot.



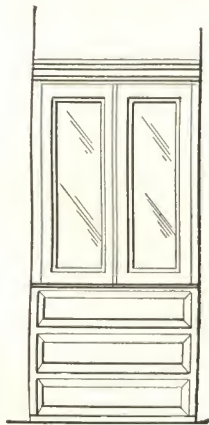
DESIGN No. 9



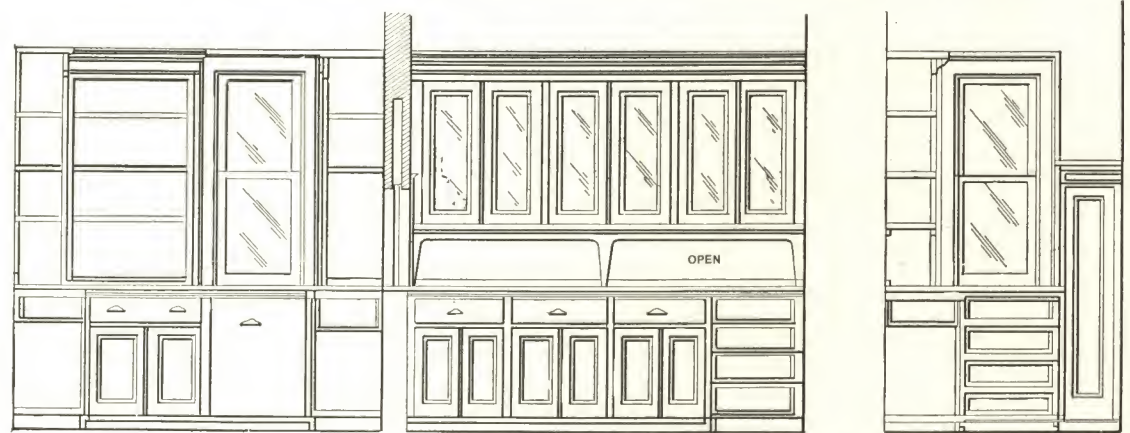
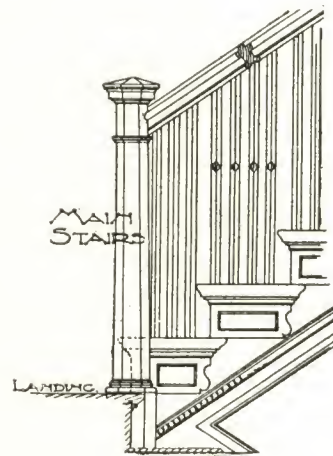
View in Hall Looking Toward the Rear.—Scale,  $\frac{1}{4}$  Inch to the Foot.



View in Main Hall Looking Toward Reception Room and Stairs.—Scale,  $\frac{1}{4}$  Inch to the Foot.



Elevation in Linen Closet. — Scale,  $\frac{1}{4}$  Inch to the Foot.



Elevations in Pantry and Butler's Pantry.—Scale,  $\frac{1}{4}$  Inch to the Foot.





# DESIGN No. 10

\$8000

THE plans, elevations and constructive details which are here presented relate to a house built in Rochester, N. Y., from drawings prepared by Howard B. Nurse of that city.

The exterior of this design works up in a very attractive style. There is a satisfactory layout of the interior, and the specifications are good. The effect upon entering the front door is striking, as the fireplace, the bookcases and the leaded glass treatment give a very rich and pleasing impression.

There is an arrangement at the side of the house for the delivery of milk, where the cans or bottles can readily be reached from the inside of the building.

The ideas carried in mind throughout were to make it compact, with as little waste room as possible, and at the same time not to sacrifice any conveniences in the arrangement of rooms, &c., and yet to design a building that might be constructed in any part of the country, with little regard to climate and the surrounding conditions of the community. The plans are so arranged as to make it optional whether or not it be situated on a corner lot. The exterior has rather a low, massive effect, with a wide overhanging cornice and low sloping roof, pleasing to the eye. The foundations to grade are constructed entirely of concrete. The first story is laid up with dark red hydraulic pressed brick, laid in cement mortar, joints tucked. Grade course, window sills, front steps and chimney caps are of a gray sandstone. The second story is covered with 16-in. Washington cedar shingles, laid in courses of 7 in. and 3 in. to the weather, the shingles being dipped three-quarters of their length in a dark moss green stain. The roof is shingled with 18-in. Washington cedar shingles, laid 5½ in. to the weather and dipped three-quarters of their length in light green stain. The cornice has sawed rafter feet with a wide bed mold cut in between, and a heavy galvanized iron gutter formed on all eaves, with four lines of conductors to carry water to drain; the under side of the cornice has brackets. The dormers are built with low graceful lines to carry out the idea of being parts of the roof.

The porch is more or less a feature in itself, somewhat Colonial in design, with three heavy turned columns at each corner, and a wide frieze with a deep soffit. The roof is painted a dark red to match the brickwork. The steps are broad, with a coping of brick at each end.

The front entrance door is painted a light shade of green on the outside, with leaded glass in upper panel, and has a heavy antique brass knocker, and a heavy brass thumb latch with cylinder lock. The casing on either side of door is formed of fluted pilasters with a heavy cap finish; this and all other outside woodwork, including sash, is painted an ivory white shade.

The entrance is through a vestibule, which has panel side walls 5 ft. high and a tile floor. In one of the panels is built an umbrella case, lined with galvanized iron, with a drain pipe running to the cellar.

The vestibule is finished in red oak, and has a full-length plate glass door; the hall is in red oak, with a wide stairway leading to second floor, while the stairs have a carved newel post, molded rail, and turned balusters. There is a large window on the stair landing glazed with art glass.

The reception room to the left is finished in red oak, the floor of both reception room and hall being a mosaic with a 12-in. pattern border. The library is finished with a dark weathered oak, and the ceiling has heavy cased beams. There is a large fireplace built of dark red pressed brick, with a heavy oak mantel shelf, and on either side of the mantel are bookcases, with shelves inclosed by leaded glass doors. The windows above the bookcase are glazed with art glass.

Sliding doors separate the library from the dining room, also finished in dark weathered oak with cased beam ceiling. The bay window is cased up with seat as shown, the sides and ceiling of it being paneled. Three windows at the further end of the dining room are hinged to swing, and are glazed with diamond shape leaded glass. They are short windows allowing space below for a sideboard. Under a wide plate rail around the dining room, the walls are covered with burlap, on which at intervals there are ¾ x 3 in. strips placed horizontally to form panels. The floors of both the dining room, and library are of mosaic, with a 14-in. pattern border. The toilet room at the end of the hall is finished in oak, with oak floor. This room is fitted up with a lavatory, and also has a rear stairway leading from it to the landing of the front stairs.

The kitchen is fitted up with a porcelain sink and wash tray, a 40-gal. hot water tank and gas heater, and has red oak finish and Georgia pine floor, with a wainscoting formed of Keene's cement and marble dust, and lined off



## DESIGN No. 10—Continued

to imitate tile and enamel to a height of 5 ft., finished with an oak wainscoting cap. The pantry has a refrigerator, shelves, cupboards and lockers, all complete in red oak.

The second story hall is finished in red oak, with a mosaic floor. The bedrooms on the second floor are in white wood, enameled, with the exception of the doors, which are stained to imitate mahogany. There is a porcelain lavatory in the dressing room. The bathroom has a shower bath, porcelain fixtures, tile floor and side walls to a height of 4 ft. The finish is of white wood, enameled. All bedroom floors are mosaic. There is a room in the attic for the servant, with a bath adjoining, the finish being of chestnut with pine floor.

All hardware throughout is of dull brass.

In the basement there is a laundry with Alberene stone wash trays, also a vegetable cellar with wide shelves; and bins and coal bins as shown. There is a cement floor throughout the entire cellar, while all woodwork is of pine, painted.

The house is heated by a hot water system; the heater of large enough capacity to heat the house to 70 degrees in zero weather. The heater is covered with two coats of asbestos cement with wire netting between. It is provided with the usual cocks of the proper size and of suitable material for filling and emptying the system. The heating system is also equipped with a thermostat, and the heater is connected to the chimney with a galvanized iron smokestack of ample size, fitted with a close-fitting damper.

The radiators consist of three loop ornamental vertical loop cast iron radiators, all of standard size except under the windows, where they are 16 in. high. Each radiator is furnished with a quick opening nickel plated wood wheel radiator valve, also with a nickel plated air cock operated with a key. The radiators and exposed pipes above cellar are painted to correspond with the decorations. An automatic feed tank fitted up with the proper valves, is supported on neat shelf in the attic and has an overflow pipe running to some suitable drain. There are all the necessary flow and return mains and connections, properly proportioned and of the best quality wrought-iron pipe; all the risers to upper rooms concealed. The fittings are of heavy cast iron, and all pipes in the cellar are covered with asbestos air cell covering, and the outside wall risers with hair felt, and the main, and return pipes, and connections are supported by strong hangers.

The building is lighted with combination gas and electric light fix-

tures. The cutout cabinet is made of iron and has a hinged door and lock complete, and contains all cutouts controlling the various circuits throughout. All the wires are run in the best quality of iron armored conduit, but were not drawn in until after the plastering was dry. They are of the best grade, rubber covered, wire, and all are of such a size that the drop in potential at farthest outlet does not exceed 2 per cent. under maximum load. Two three-way switches are in the hall to control the hall lights, and a flush push button switch controlling the porch light is located in the vestibule.

The detailed estimate of the cost of the building is as follows:

### EXCAVATION.

Teams per day, \$5; labor per day, \$2.25. The expense of excavating earth for cellar, providing it is loose loam and the earth does not have to be hauled more than 250 ft.:

Loosening soil .....	\$10.00
Scooping out earth.....	60.00
Total.....	\$70.00

### MASON WORK

Wages per day for mason, \$5. Concrete can be mixed and placed in this locality, including materials and forms, at \$7 per square yard. Cost of laying brick, including materials, \$16 per 1,000.

Cost of concrete work.....	\$259.00
Laying walls above grade, including all materials (pressed brick to cost \$30, common brick \$8).....	984.00
Cost of laying two chimneys.....	258.00
Cost of two mantels laid up in pressed brick, with iron throat and damper....	143.00
Cost of cut stone.....	178.00
Cost of cellar bottom (10 cents per square foot).....	112.00
Cost of cement walks (12 cents per square foot).....	30.00
Iron columns in basement.....	7.50
Iron brace for chimney.....	3.00
Angle bars for lintels over cellar windows.....	5.50
Total.....	\$1,980.00

### CARPENTER WORK.

Scale of wages, \$3.25 per day. Hemlock lumber, \$28 per thousand. Pine lumber No. 3, planed and matched, \$33 per thousand. Georgia pine lumber, planed and matched, No. 1, \$50 per thousand. Washington cedar shingles, 18-in., Perfection brand, \$6.25 per thousand.



# DESIGN No. 10—Continued

Cost of rough lumber and framing same, including all labor, as follows:

Girders .....	\$20.00
Joist .....	209.00
Studs .....	115.00
Plates .....	12.00
Rafters .....	56.00
Furring strips .....	17.00
Sheathing .....	91.00
Roof boards .....	70.00
Rough floor .....	150.00
Cellar partitions .....	26.00
Outside trim, including cornice and porches.....	211.00
Building paper .....	12.00
Shingling roof and sides (\$10 per square).....	325.00
Flashings .....	15.00
Galvanized iron conductors.....	22.00
Galvanized iron gutters.....	76.00
Tin roof on porches and bats (\$10 per square).....	35.00

Interior finish and millwork (this figure includes the cost of labor and materials for laying and erecting):

Doors and trim.....	550.00
Windows and trim, including glass other than art.....	535.00
Base board .....	45.00
Picture molding .....	24.25
Plate rail .....	5.20
Cased beams .....	147.00
Book cases .....	31.00
Pantry finish and trim.....	60.00
Stairs, all fitted up complete.....	210.00
Mosaic floors, laid and finished, 30 cents per square foot.....	454.80
Georgia pine floors, No. 1.....	20.50
Drawers and shelves for closets and linen press.....	60.00
Rough hardware .....	65.00
Finished hardware .....	120.00
Tiling .....	225.50
Art glass .....	98.00

Total.....\$4,113.25

## PLASTERING.

Using patent plaster, 35 cents per square yard (this figure includes lathing)... \$316.00

## PAINTING.

Scale of wages, \$2.75 per day.

Cost of finishing interior woodwork, dipping shingles on roof and sides and painting all other outside woodwork and metal work..... \$420.00

## ELECTRIC WORK.

As per specifications..... \$187.50

## HEATING.

Hot water heat, cost of apparatus and installing same..... \$379.00

## PLUMBING.

Scale of wages, \$4.50 per day.

Using standard goods, Grade A, iron drains in cellar and first-class material throughout ..... \$397.00

## GAS AND ELECTRIC FIXTURES.

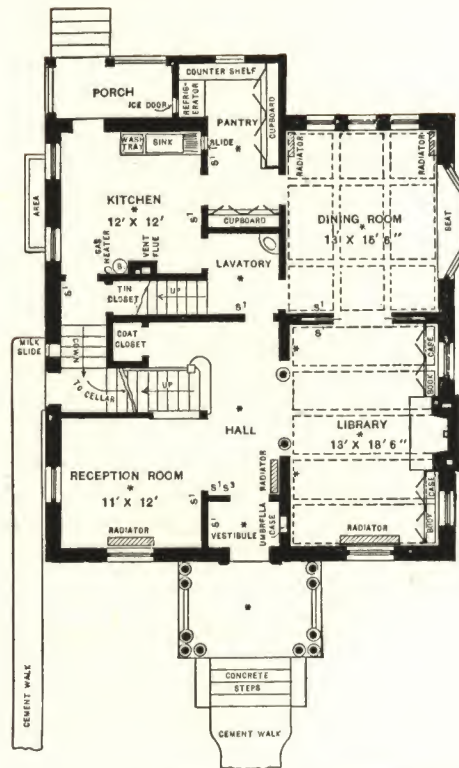
For combination gas and electric fixtures and for setting same, all complete.. \$136.00

## RECAPITULATION.

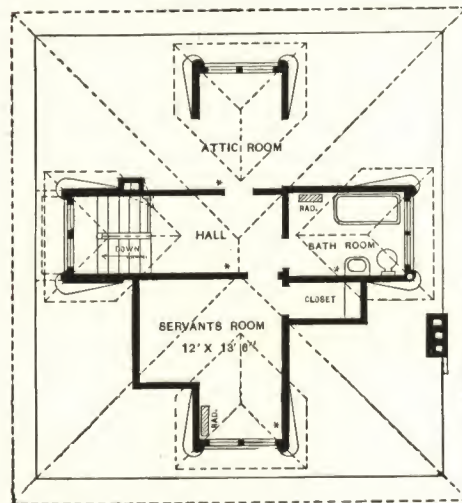
Excavation .....	\$70.00
Mason work .....	1,980.00
Carpenter work .....	4,113.25
Plastering .....	316.00
Painting .....	420.00
Electric work .....	187.50
Heating .....	379.00
Plumbing .....	397.00
Gas and electric fixtures.....	136.00

Total cost of building.....\$7,998.75

# DESIGN No. 10

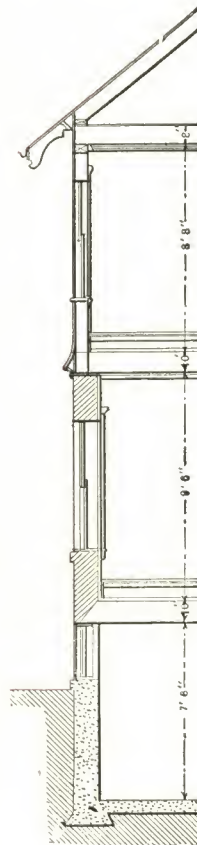


Ground Floor.



Attic with Outline of Roof.

Floor Plans.—Scale,  
 $\frac{1}{16}$  Inch to the Foot.



Section.

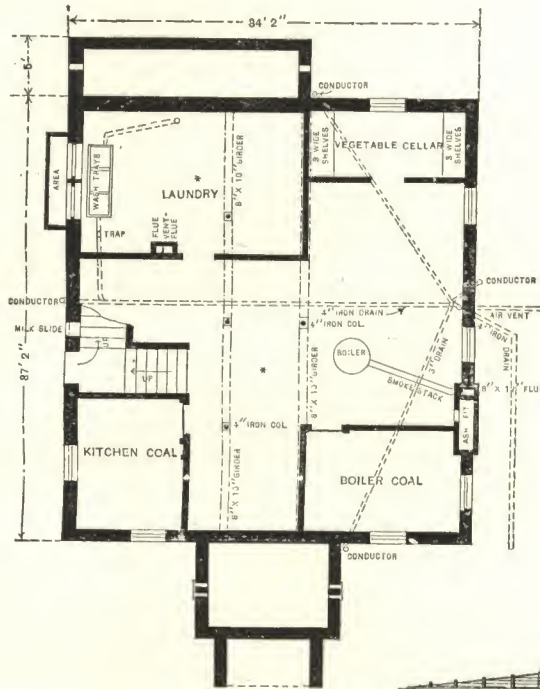


Front Elevation and Section.—Scale,  $\frac{1}{8}$  Inch to the Foot.

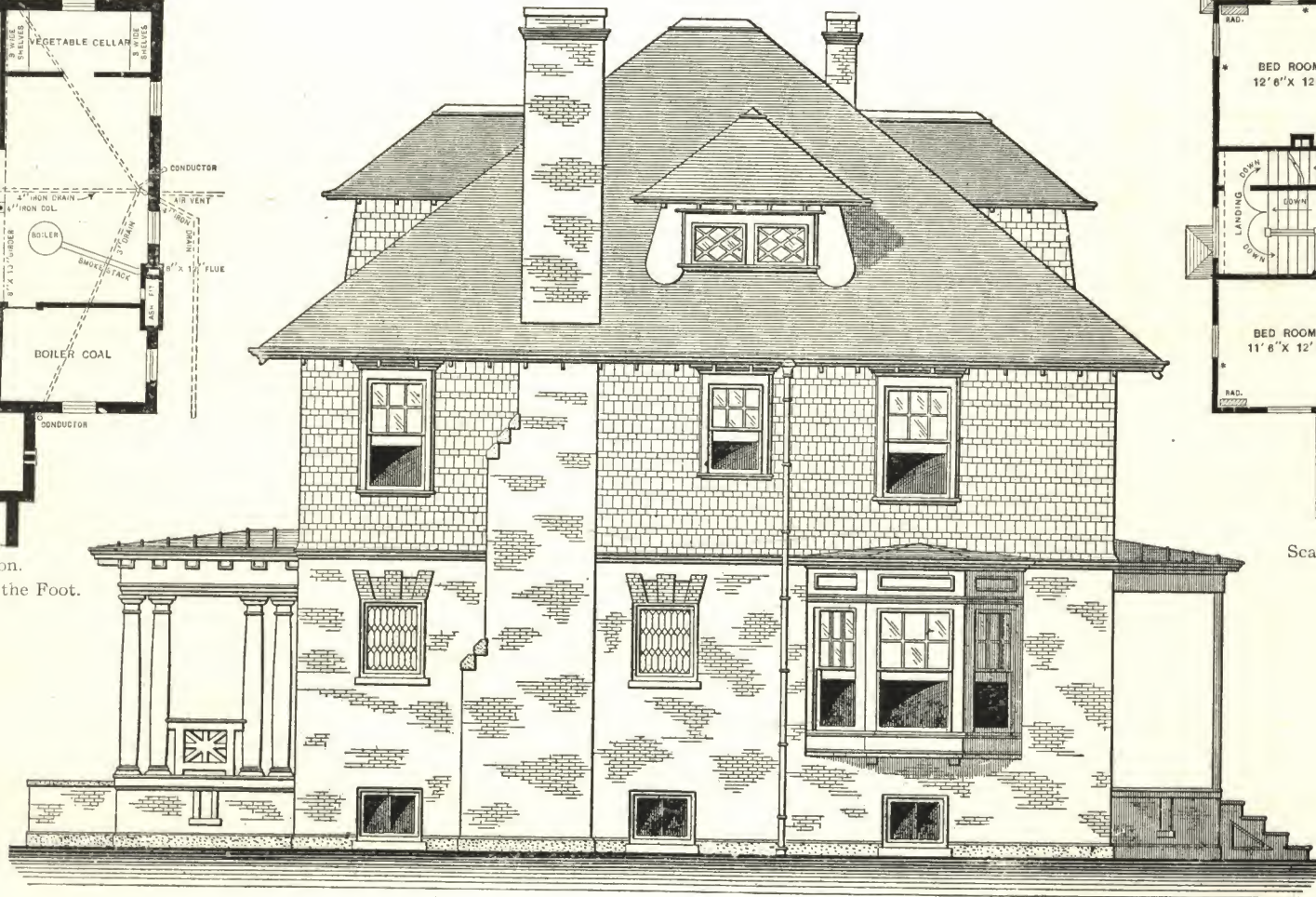
ARCHITECT:  
HOWARD B. NURSE,  
ROCHESTER, N. Y.



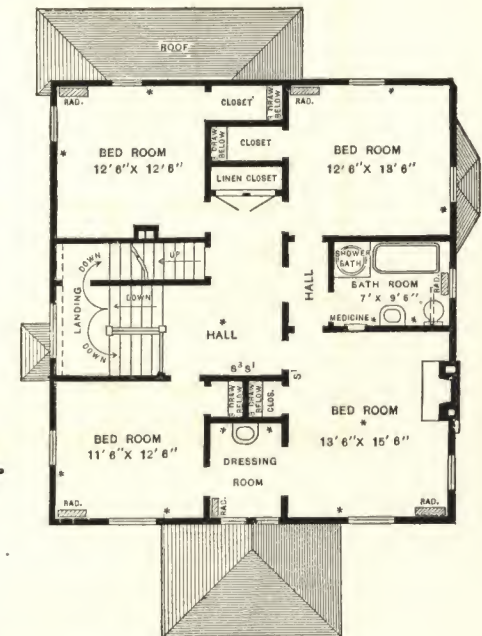
# DESIGN No. 10



Foundation.  
Scale,  $\frac{1}{16}$  Inch to the Foot.

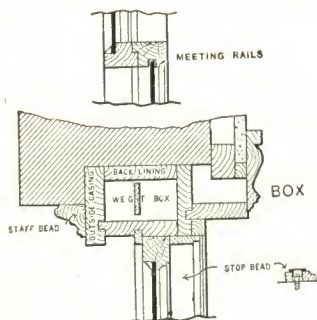
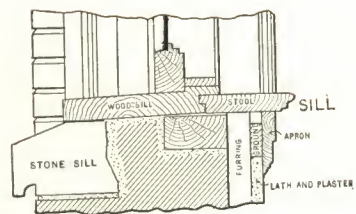
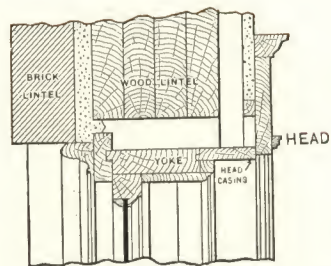


Side (Right) Elevation.—Scale,  $\frac{1}{8}$  Inch to the Foot.

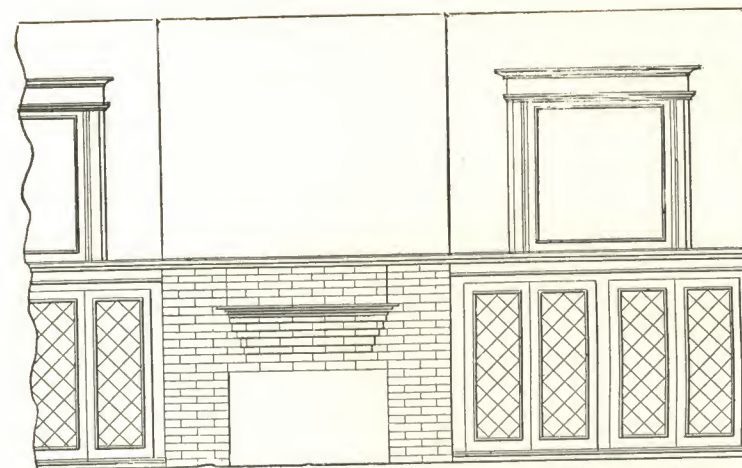


Second Floor.  
Scale,  $\frac{1}{16}$  Inch to the Foot.

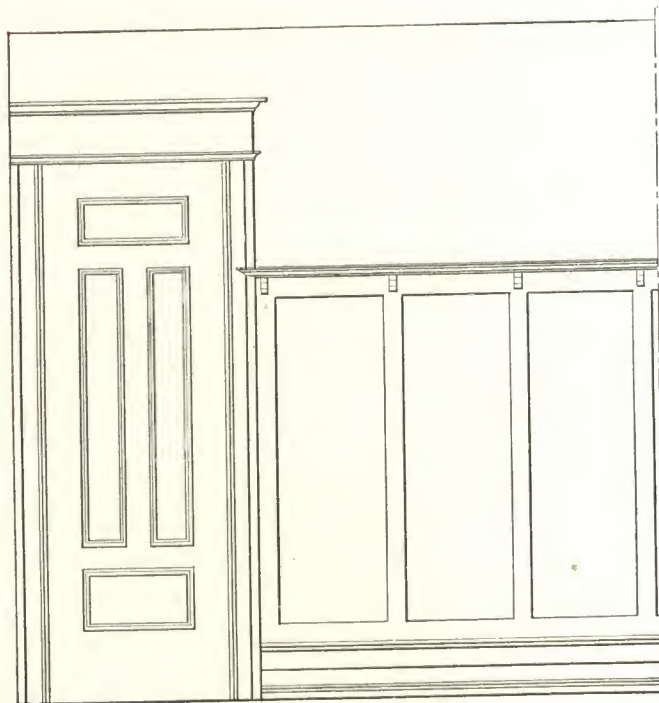




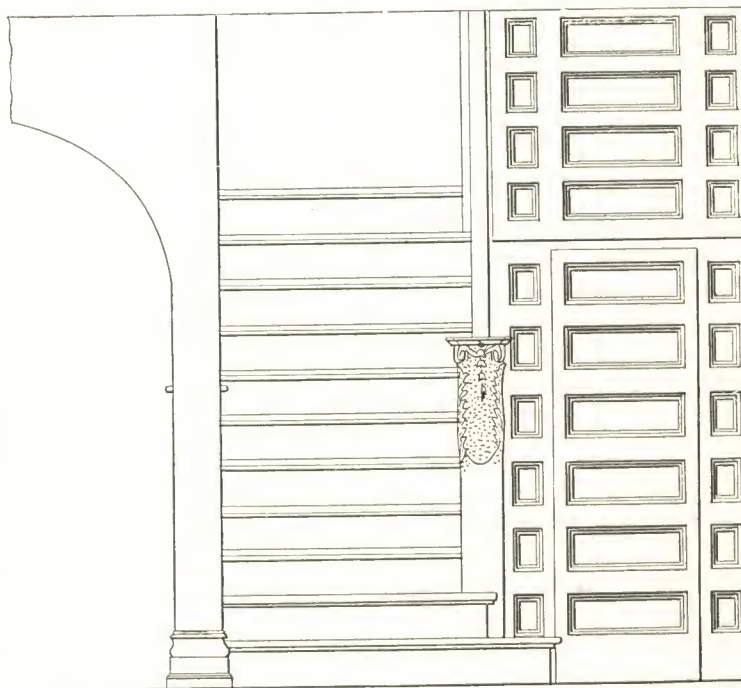
Details of Window and Trim.—Scale, 1 Inch to the Foot.



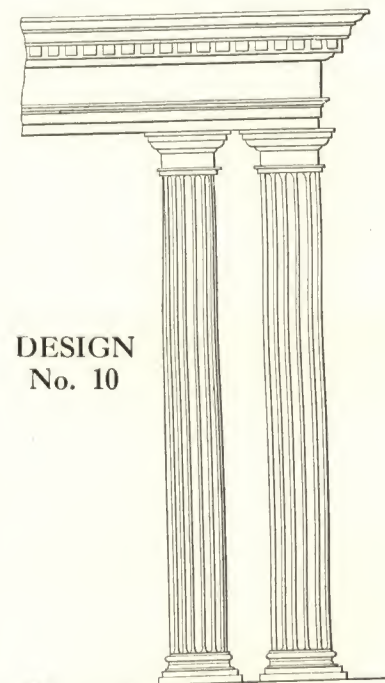
Detail of Mantel and Bookcases in the Library.—Scale,  $\frac{1}{4}$  Inch to the Foot.



Details of Dining Room Finish.—Scale,  $\frac{3}{8}$  Inch to the Foot.



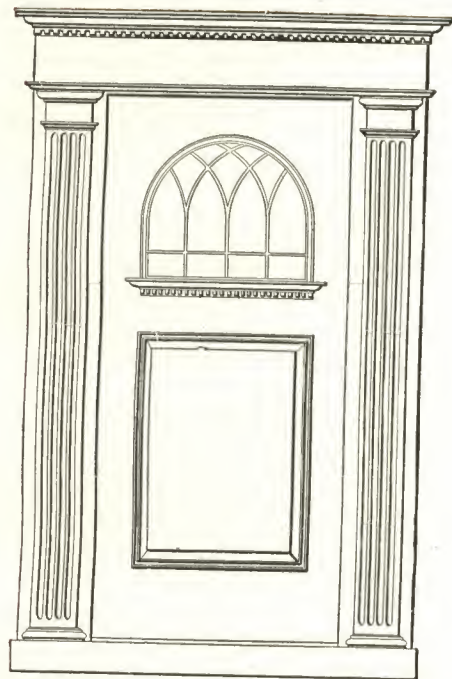
Detail of Main Stairway.—Scale,  $\frac{3}{8}$  Inch to the Foot.



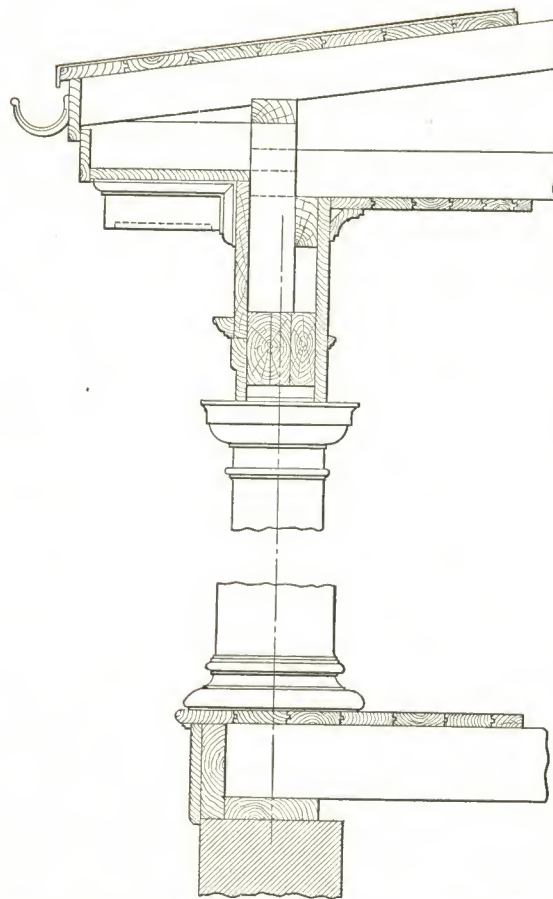
DESIGN  
No. 10

Detail of Arch Between Hall and Library.  
Scale,  $\frac{3}{8}$  Inch to the Foot.

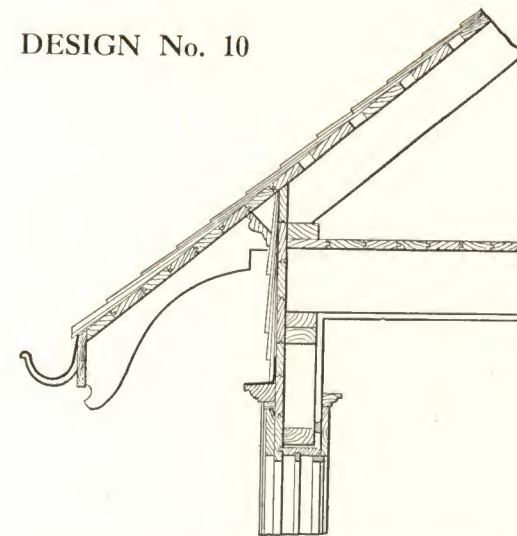




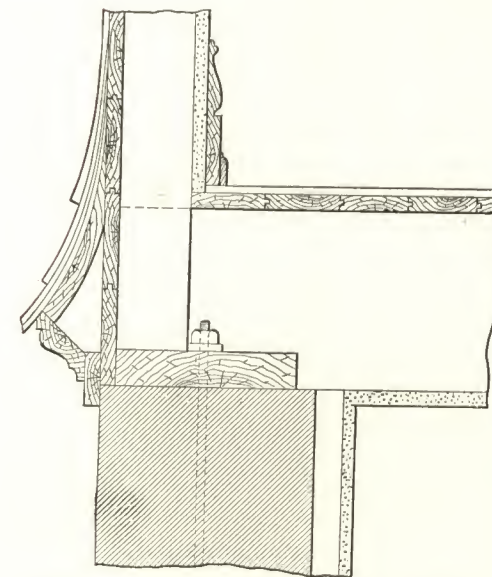
Elevation of Front Door.—Scale,  $\frac{3}{8}$  Inch to the Foot.



Details of Front Porch Column and Cornice.—Scale,  $\frac{3}{4}$  Inch to the Foot.



Detail of Main Cornice.—Scale,  $\frac{1}{2}$  Inch to the Foot.

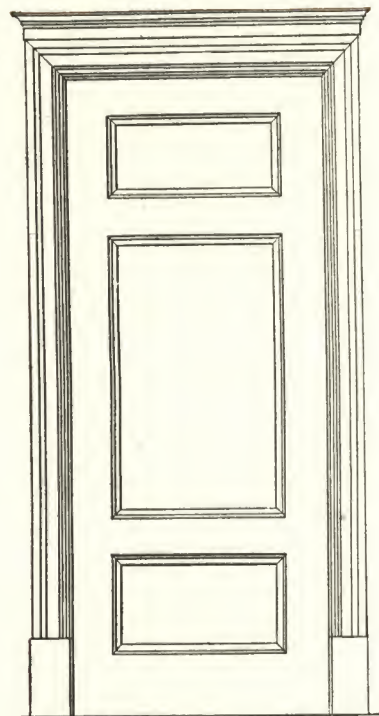


Detail of Belt Course.—Scale,  $\frac{3}{4}$  Inch to the Foot.

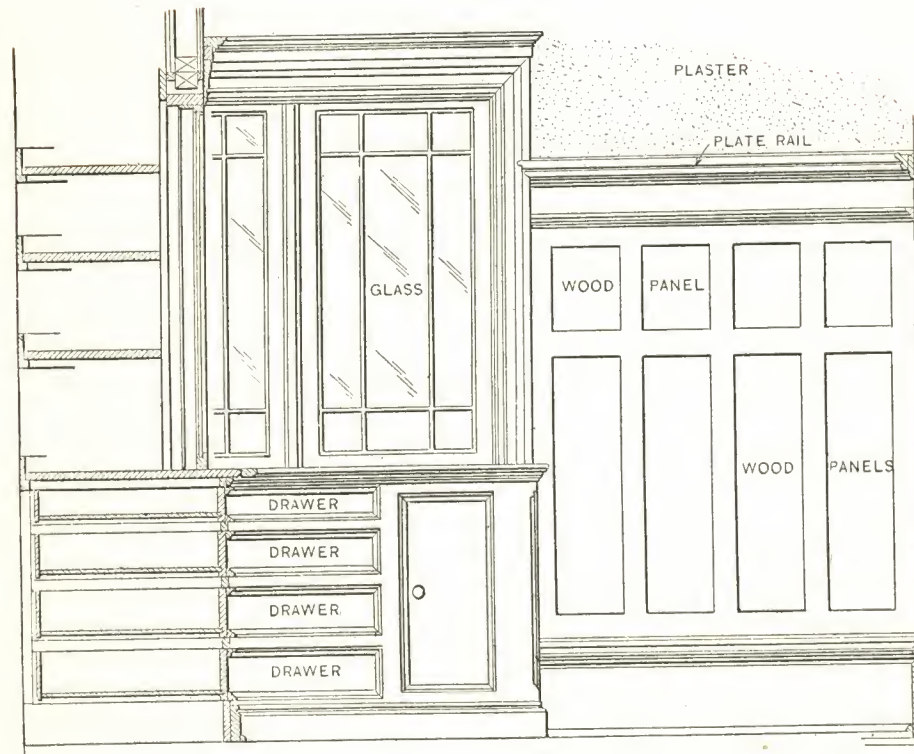
# DESIGN No. 10



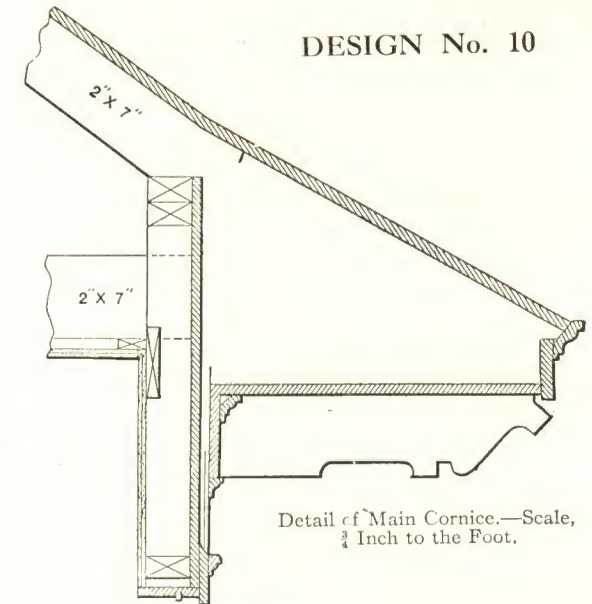
Partial Plan of China Closet.—Scale,  $\frac{3}{4}$  Inch to the Foot.



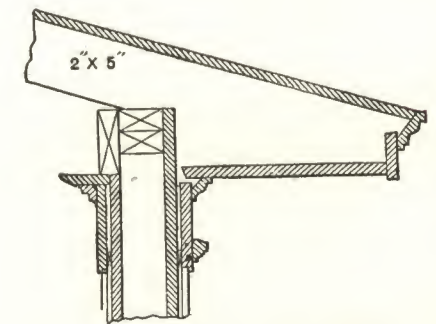
Elevation of Door, Showing Finish in Principal Rooms.—Scale,  $\frac{1}{2}$  Inch to the Foot.



Details of China Closet with Paneled Wainscoting in Dining Room.—Scale,  $\frac{1}{2}$  Inch to the Foot.



Detail of Main Cornice.—Scale,  $\frac{3}{4}$  Inch to the Foot.



Section of Veranda Cornice.—Scale,  $\frac{3}{4}$  Inch to the Foot.



# DESIGNS No. 11 TO 13

\$8000 to \$11,000

In their many offices throughout this country, architects are constantly being asked by their clients to design for them English Country Houses, Spanish Mission Houses, French Châteaux, Norman Farm Houses, Italian Villas or Swiss Châlets, but never an American house. In the foreign countries clients are not reciprocating, by asking their architects to design for them American houses. The fireproof house is our only contribution to architecture, and through its popularity here, there may be developed an American type. How such a type may gain ground we will, in slight degree at least, endeavor to set forth.

When the houses of different countries are mentioned, the characteristics that claim attention are typical of the lands and their people. With us inventiveness and commercialism have led the way to building with native and durable materials. These appeared first in the largest constructions, later in the small houses, and with their fireproof qualities they are needed in schools, factories, theaters, churches, office buildings, and dwellings, and there is every reason for their universal use.

In the first place, design in fireproof materials, must be masonry design. Through the character of the material, the work must be solidly constructed. What a change from the flimsy methods of our earlier work and how welcome to the designer! Because our solid fireproof materials may not be so lightly dealt with, as may the parts of a frame building. "Infinite pains" are required to produce a thing simple and beautiful, and the more difficult the problem, the more successful the solution. A fireproof house is built of concrete, or tile and concrete, materials as lasting as the Pyramids. Many a clap-board monstrosity would not have been perpetrated if its designer had but realized the shortness of its existence.

The most durable of our architectural structures have been without exception the most beautiful; and if permanency makes for beauty, it may be honestly expected that the American type will be an advance along artistic lines.

With the American type the owner will realize also the hidden value of a house. There is in every concrete building, a more than necessary strength. This is not obvious, as is its charm of design or cleverness of plan. Many builders and owner's to-day do not appreciate such hidden value, and will not

pay for it, and they will have to be educated by the example of their wiser neighbors, who build for their children as well as for themselves.

It may be well to describe the process of building these permanent houses, which we hope will give rise to the American type. Their materials are chiefly tile or concrete, or a combination of the two. The greatest American inventor has long experimented with concrete houses and has interested architects in his efforts. His house is to be of the poured monolithic concrete style; that is, the forms will be erected all at once, and the whole house poured like iron castings into a mould.

A better perfected scheme, is the block house, where the walls are built up of tile or concrete blocks and only the parts doing work as beams are poured into moulds. In this house the floors and often the roof are of concrete, although the necessary flatness of the roof is not yet a popular form. The terra cotta blocks used in this house are much the same as those used in skyscrapers for fireproofing. The exterior walls are covered with stucco, so that the appearance of both the concrete and tile houses is the same on the outside. The block idea may be carried out by the use of concrete, tile or even common brick. An effort is now being made to so beautify the appearance of the tile that it need not be covered.

Some examples of these American dwellings are presented here in a series of views of cement houses designed by Squires & Wynkoop, 27 East 22nd street, New York City. In the case of the first house, that of Professor James E. Lough, University Heights, New York, and which was erected at a cost between \$10,000 and \$11,000, the main thing the designers endeavored to accomplish, was to secure for the floor spans a form of construction which would be sufficiently strong for the purpose, and as this was one of the early houses of its type constructed within the limits of Greater New York, it was necessary to make tests for the Building Department. It was found that the floor would carry 90 lb. per foot, and from an inspection of the plans it will be seen that two bearing walls were introduced, thus dividing the building into three sections, so that no span was over 14 ft. Use was made of 4 x 6-in. beams placed 16 in. on centers, and the mixture was 1:3:5 Portland cement, and the aggregate stone was not over one-half an inch. The reinforcement was a 5/8-in. square iron bar that was kept within 1 in. of the bottom of the

#### DESIGNS No. 11 to 13—Continued

beam up to a point about 1 ft. from its bearing, where it was bent up to the upper surface of the beam to take care of the shear that occurs at the bearing. This floor was tested to 100 lb. The whole beam and tile construction was covered with 1½ in. of concrete, in which the sleepers were bedded.

From an architectural point of view, the interest in the house grows out of the fact that the architects were not tied down to ordinary building by the method of construction outlined. The plan, it will be seen, is irregular and the exterior treatment very free.

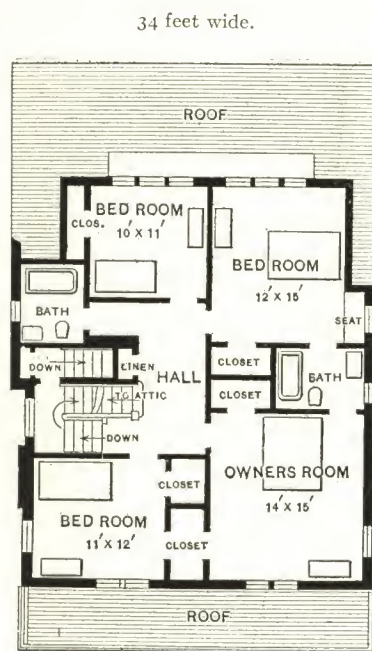
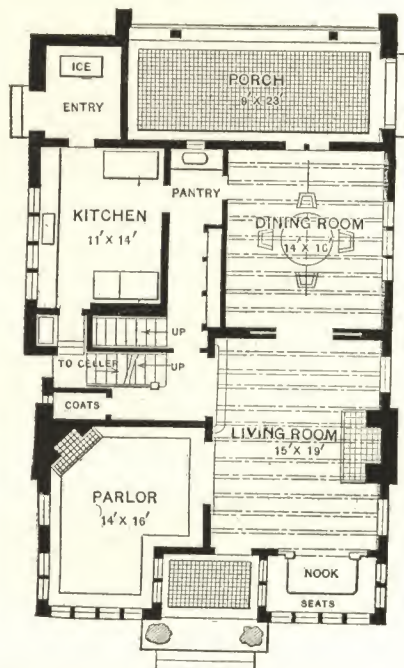
The house of J. William Clark, which is shown in the row on the opposite page, is also architecturally interesting, because it is located on a sharp slope, and yet it does not present the appearance of "sliding down hill." Every point was well worked out, the details of the door and window frames so carefully, that they are regarded as more nearly perfect than the ones usually found in houses of this character.

The residence of J. H. Keiser at Seagate, N. Y., cost between \$8,000 and \$9,000. The exterior walls are mostly brick, owing to the fact that at the time the house was constructed, the Brooklyn Department was making great objection to the use of tile. In some of the first story floors the tile construction was used, and the cost would have been largely reduced had it been possible to use tile in the exterior walls. Since this house was completed, however, large numbers of tile houses have been built in Brooklyn, and at various points, throughout the island.

A special feature of the house at Bogota, N. J., and illustrated on the second page following, is the fact that the span of the floor beams was such as to require a tapered beam greater than any tile block made, and it was necessary to form the bottom of the beam in metal "forms" and let them project into the room 3 or 4 in. The spaces between were plastered, which gave a concrete-beamed ceiling, this of course being perfectly proper in a house of this type. Only composition floors were used and the color was varied, although for the most part a rich dark brown was adopted. The top floor was made simply with a clear cement coating. The roof is Akron clay tile, and the only wood in the house are the rafters of the roof, and the sheathing under the roofing tile. The house shows how freely the construction lends itself to any form of architectural treatment, and before it was built a small model was made in order to correct any errors in design.

The house of Charles A. O'Malley, at Hedden Terrace, Newark, shown on the opposite page, has the beamed ceiling feature already mentioned. It goes, however, a step further in carrying a bearing partition on one of the long spans. Another point is the grouting in connection with the walls that had to carry an unusual load. The holes of the tile were poured full, and a reinforcement used, consisting of vertical ¾-in. round rods. The house has tile floors, side and bearing walls and a tile roof on wood beams and sheathing. The design is one easily constructible in tile, and was built for between \$9,000 and \$10,000.



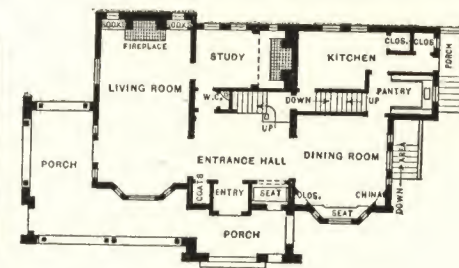


34 feet wide.

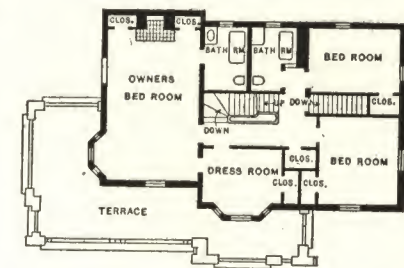


House of Prof. Lough.

DESIGNS Nos. 11, 12, 13



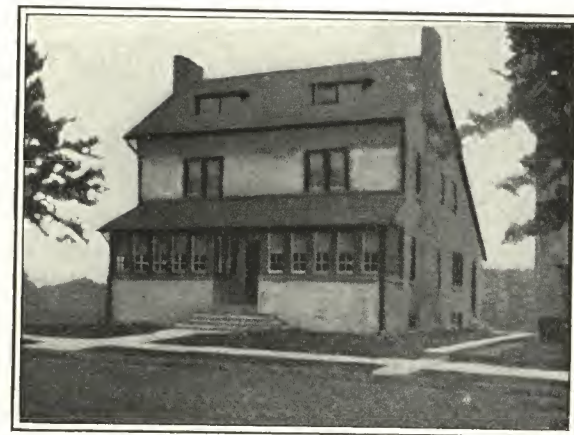
Main Floor of Prof. Lough's House.



Second Floor of Prof. Lough's House.



End View of House of Chas. A. O'Malley.

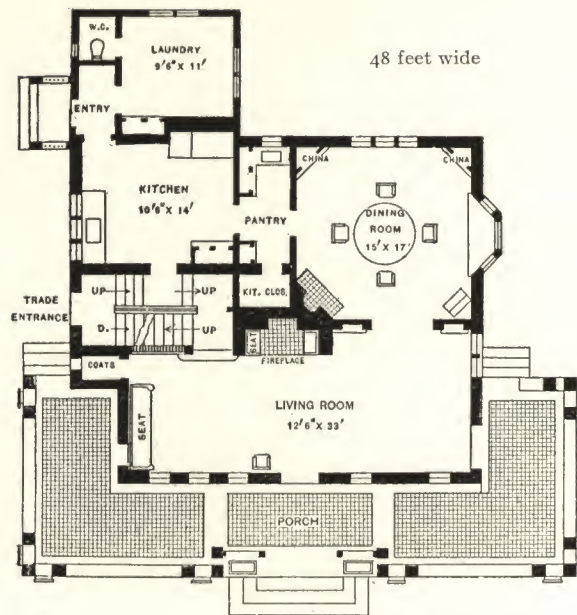


House of Chas. A. O'Malley.

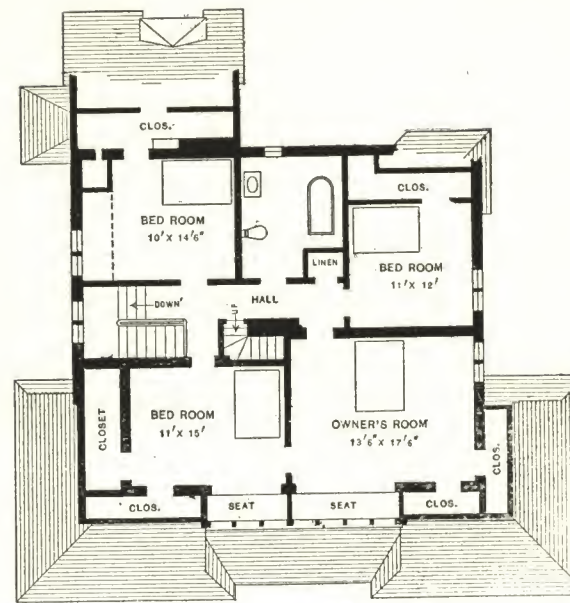


House of William Clarke.





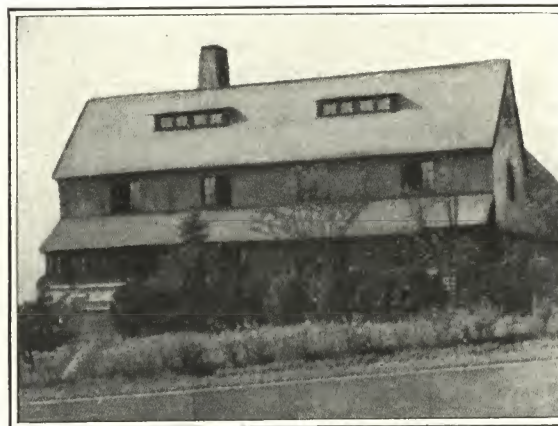
First and Second Floor Plans of House of J. H. Keiser, at Seagate, N. Y.



House of J. H. Keiser.



Rear View of House at Bogota, N. J.



Front View of House at Bogota, N. J.



Another View of the Keiser House.



## DESIGN No. 14

**\$8500**

AMONG the many interesting examples of modern residences which are being erected in and about the suburban sections of the country, are those in which cement-concrete plays an important part, more especially perhaps in connection with the exterior treatment of the building. One of the many styles in which suburban residences may be treated along the lines indicated is shown here in a picture reproduced from a photograph of a two-story stucco residence with Spanish tile roof, erected for Frank Bock on Meeker avenue, Weequahic Park, Newark, N. J., in accordance with plans prepared by Architect Clarence Wilson Brazer, St. James Building, 1133 Broadway, New York City.

The porch columns and balustrade and the roof effects, not only of the front veranda, but also of the main building itself are unusual and an examination of the plans shows that the living room extends entirely across the front of the house and has on the left side, an open fireplace to add cheer to the room when the heating system is not in operation. From the living room rises the main flight of stairs leading to the second story, and directly under this flight is the one leading from the kitchen to the cellar; another flight of stairs leads

from the kitchen to the second story, and from the hall on the second floor stairs lead to the attic where there are two sleeping rooms and a bath room.

The dining room has a bay window on the left side and a triple window at the rear. The dining room and kitchen are connected by a commodious pantry with double swing doors, and communication between the front of the house and the kitchen is established through the coat room.

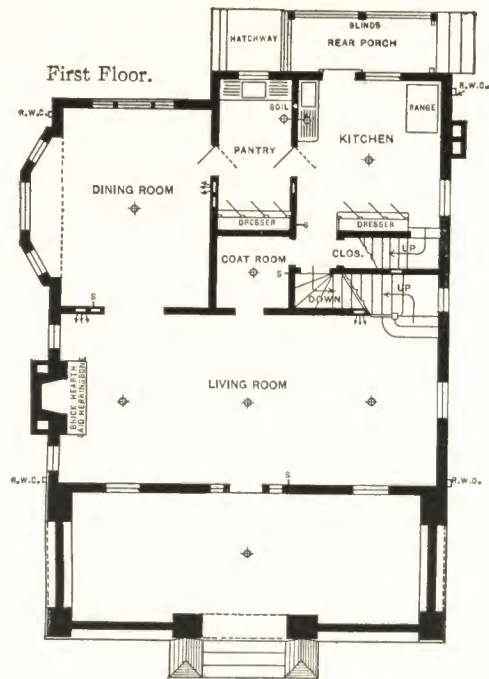
On the second floor are ample clothes closets, four sleeping rooms, finished in white enamel with mahogany-finish doors, and a bath room with side walls and floor of tile.

The living rooms on the first floor are finished in hard wood and have parquet floors.

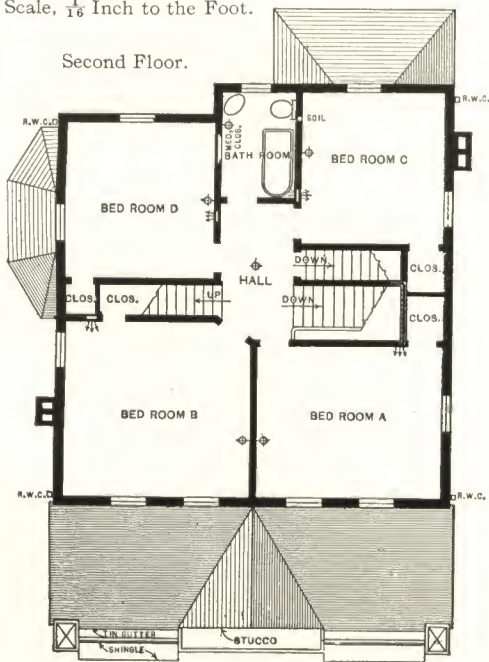
The building is heated by steam and is equipped with combination gas and electric light fixtures. The plumbing is of the open type, and both heating and plumbing systems were installed by John K. Duym, 477 South Nineteenth street, Newark, N. J.







Scale,  $\frac{1}{16}$  Inch to the Foot.



Photographic View of the Completed Residence, Showing Unique Veranda Construction and Spanish Tile Roof.

ARCHITECT: CLARENCE WILSON BRAZER, NEW YORK.





# DESIGN No. 15

\$8750

EVER since the use of cement as a covering for the exterior walls of buildings of various kinds became popular with the building public, the "slap dash," "stucco," and "pebble dash" finishes have been most in vogue. In the case of dwelling houses especially, "stucco" for the outside walls has been rapidly growing in favor, and the same style of treatment has been given to the garage, should there be one, in order that the two buildings may harmonize in their external architectural features. As a usual thing the garage of the suburbanite, and in many cases of the city dweller, is separated from the residence, the distance regulated very largely by the space available. Sometimes, however, the garage is made a portion of the building occupied as a residence, and the design shown here is an example of this kind.

An examination of the half-tone pictures representing three views of the exterior of the building, shows that the garage is really a component part of the main structure, separated from the rear end, by a wall of terra cotta blocks, and accessible without going out of doors or passing through the service portion of the house, conveniences unusual in a dwelling as small as the one illustrated.

Noticeable features of the exterior treatment of the building are the roof effects, produced by the many irregularities in its outlines; the half timber treatment at the gable ends; the quadruple window which projects at the second story and affords basis for the commodious seat in the front chamber; and the triple windows in the living room and second story, the latter lighting the main flight of stairs and the hall on the second floor.

Referring to the floor plans, it will be noticed that the entire front of the house is taken up with the living room, which measures 14 x 18 ft., and contains an open fireplace, a view of which is afforded by means of one of the half-tone interiors. The position of the main hall is such as to give direct access to the living room, to the dining room, which may also be reached directly from the outside by way of the veranda at the corner opposite that of the front porch, and to the kitchen; the hall is entered from the porch at

the left front corner of the building. Under the window in the front hall is a seat with double covers. In the passage beyond, leading to the side entrance, is a coat closet with shelf and hanging rod.

Communication between the kitchen and the dining room is established through a commodious pantry, the door between being of the double swing type. Under the main flight of stairs, is the flight from the kitchen leading to the cellar. In what may be termed the rear entry, is the refrigerator, which occupies a space directly opposite the door opening into the kitchen. The kitchen sink is placed under the triple window which opens out upon the rear portico, the latter serving as the direct approach to the kitchen and also to the garage, and forming the connection between the two buildings.

On the second floor are three sleeping rooms, with ample closets, and a bath room, and stairs lead from this floor to the attic. There is also a good linen closet opening from the hall, and fitted with shelves and drawers.

The building has a stucco exterior on metal lath stapled to wooden studs and is covered by a slate roof. The stucco is three-coat work, the finish being a dash coat to give a brilliant surface texture.

The principal rooms on the first floor have oak floors, and are finished with ceilings of wooden beams having plaster panels. The walls are wainscoted with stiles and rails of wood and the panels are filled with Japanese grass cloth, giving a very attractive effect.

The floor of the kitchen and pantry is Asbestolith with sanitary base. The second story is finished in cypress with the floors of hard pine.

The floors of the porch and veranda are granolithic marked off in 2-ft. squares.

The plumbing fixtures consist of set tubs in laundry in the basement, soapstone sink in the kitchen, and a bath tub, water closet, and wash basin in the bath room, all supplied with fixtures for hot and cold water.

The walls of the garage are hard burned terra cotta blocks 8 in. thick, plastered inside and outside with cement and lime mortar. The granolithic

**DESIGN No. 15—Continued**

floor is 2 in. thick. The house and garage are heated by an Arco boiler made by the American Radiator Company, the Honeywell System of hot water heating being used.

Just beyond the garage is a drying yard enclosed on three sides by lattice work of wood construction, and from the yard one may enter the cellar by means of a door and flight of stairs at the end of the garage. Directly opposite the cellar door is a gate in the lattice fence, thus giving ready access from outside.

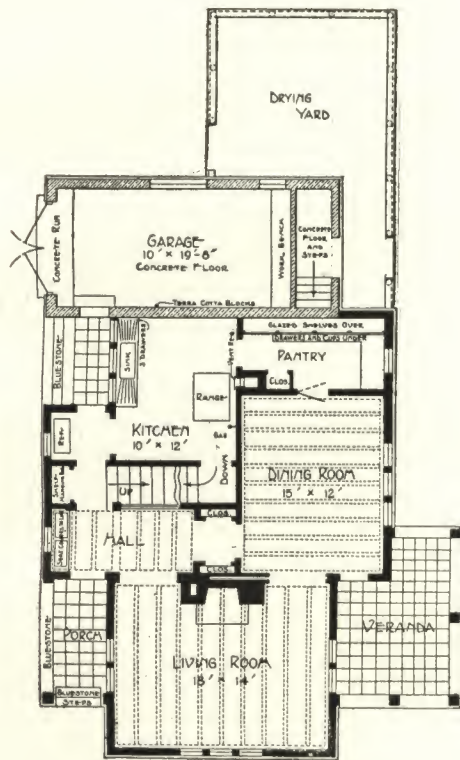
The residence and garage here illustrated and described, are those of

John W. Bell at Needham, Mass. The architects were Cleveland & Godfrey, 15 Beacon Street, Boston, Mass., and the general contractor was Alfred Parker, Needham, Mass.

The contract for the terra cotta work, brick work and plastering was executed by J. N. Brion, Needham Heights, Mass. The contract for the heating and plumbing installations was in the hands of Henry Thomas, Carters Block, Needham Heights, Mass.

According to the architects, a house of this type would cost between \$8,500 and \$9,000.





Main Floor.—Scale,  $\frac{1}{16}$  Inch to the Foot.



Residence of Mr. John W. Bell at Needham, Mass., Showing Garage Immediately at the Rear of the House and Communicating Directly with It.

ARCHITECTS:  
CLEVELAND & GODFREY,  
BOSTON, MASS.

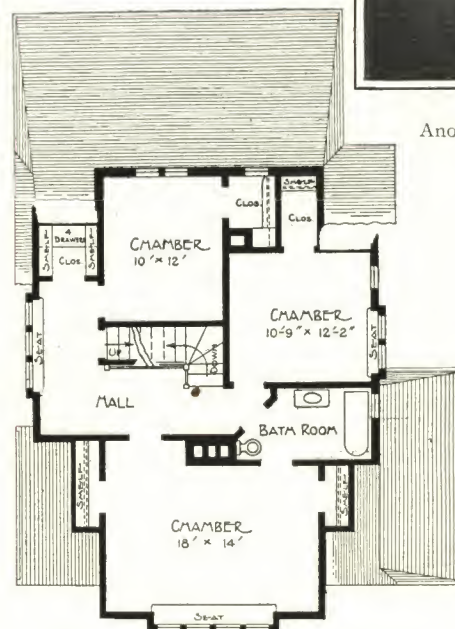
DESIGN No. 15



House and Garage of Stucco Exterior on Metal Lath.—View of Front and Right Side of Building.

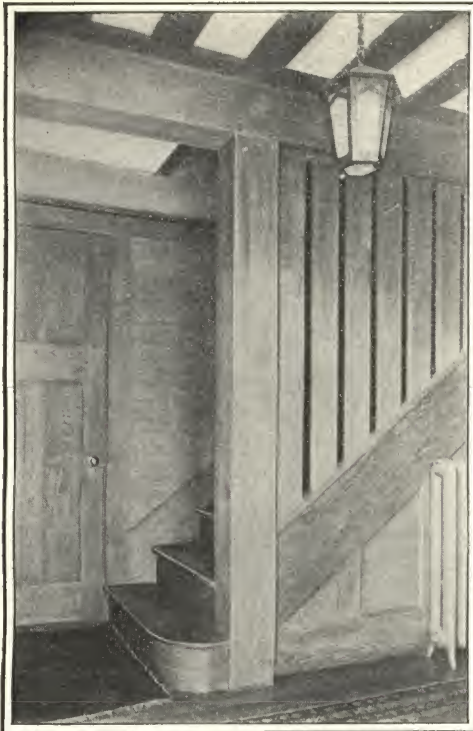


Another View of Residence of Mr. J. W. Bell Showing Garage in the Foreground.



Second Floor.—Scale,  $\frac{1}{16}$  Inch to the Foot.





View in Main Hall Looking Toward the Stairs and Showing Door to Kitchen at the Left.

DESIGN No. 15



House and Garage of Stucco Exterior on Metal Lath.—View in Dining Room.



View in Living Room Looking Toward the Fireplace and Mantel.





# DESIGN No. 16

\$9000

ONE of the noticeable features of the present era of building activity, especially in the vicinity of New York, is the growing tendency toward what may be termed the "fireproof idea" in connection with dwelling houses of comparatively moderate cost. In the development of this idea hollow terra cotta tile is extensively employed, and its use is well illustrated in a building operation now in progress in one of the many beautiful suburbs of which New York City can boast. The operation involves the erection of a rather remarkable group of 24 houses of semi-fireproof construction; six have already been completed, while others are under way and will be finished as soon as the weather will permit. The prime movers in the enterprise have gone into it with the distinct idea of counteracting, as far as possible, the cheap speculative houses, so widely built throughout the suburbs of New York, and aim not only to put up houses that are of a semi-fireproof nature and built in the most durable manner, but they have sought to combine in them the latest designs adapted to the modern methods of living. They have also aimed at and accomplished, a departure from the repetition over and over again of the same style of treatment, with the result that each of the houses in question varies in plan and exterior details, yet they are all of the same architectural period. Special attention has been directed to the color scheme with a view to avoid harsh contrasts, and the result is an interesting example of attractive street architecture.

The houses have been planned so that the kitchen sides of two houses are placed adjoining each other, and comparatively close to the building line, thus the sides of the houses on which are located the principal living rooms, are sufficiently far from their neighbors to afford an almost unobstructed view.

The rooms vary from 10 to 11 in number, exclusive of baths, and many features have been incorporated which heretofore were usually found only in expensive residences.

We have selected a typical house for illustration, with a view to showing the general style of construction, which is practically identical with all, and for the particulars concerning which we are indebted to the architects, Mann & MacNeille, 12 East Forty-fifth street, New York City, who are also supervising the work.

The several small half-tone illustrations presented herewith afford an excellent idea of several stages of the work. The first one shows the "forms" for the foundation walls being placed in position, and the concrete poured into them. The second picture represents the foundation walls of a house completed, and the tile of the main floor laid. The third picture shows one of the houses with the tile walls laid to the second story, and the arrangement of the "runway" for wheeling materials to an elevated position. The last half-tone represents two of the houses under roof, and the exterior hollow-tile walls covered with the first coat of plaster, though there is a space around the door opening of the left-hand house where the plaster has not yet been applied.

The foundation walls are built of concrete mixed in the proportions of one of cement, two and one-half of sand and five parts crushed trap rock sufficiently small to pass through a ring  $1\frac{1}{2}$  in. in diameter. The outside of the foundation walls is covered with cement mortar, mixed in the proportion of one of cement to two and one-half of sand, with an admixture of the water-proofing composition for the purpose of keeping the cellars perfectly dry.

The walls above the foundations are built of the National Freproofing Company's tile, with key on the outside, and burned hard. The tiles are laid up with Portland cement and the exterior surfaces covered with stucco, the latter being applied directly to the tiles. Some of it is two-coat work, with a "float finish," and some of it three-coat work, with a "spatter" finish. The walls at the grade line are 8 in. and above they are 6 in. thick.

The use of hollow tile in the outside walls gives a series of air spaces which not only tend to keep the houses thoroughly dry, but to render them cooler in summer, and warmer in winter, and at the same time sound, and vermin-proof.

The plaster was patent cement mortar and was applied directly to the tile on the inside, no furring being necessary. The floors are of the well-known Kahn system of construction, the reinforcing material being a trussed bar. The roofs are frame covered with slate or tile, varying in color with the different houses, some being red or green, some purple, and others mixed green and purple, giving effects somewhat out of the ordinary.

#### DESIGN No. 16—Continued

The lintels over the openings were formed with tile filled with concrete, and reinforcing bars proportionate to the span.

The vestibules with some of the halls, and some of the dining rooms are floored with tile in 6-in. and 9-in. squares and of dark tones. The bath rooms have tile floors and walls with sanitary tile base.

The interior trim is of chestnut, stained a dark tone, with wax finish on the main portions of the first floor, and yellow pine elsewhere. The cased openings between hall and living room, and living and dining room, are each 5 ft. wide. The ceiling beams are 2 x 8 in., placed 16 in. on centers.

The chases for the gas pipes and for the electric wiring conduits were cut after the walls and partitions were erected. For the plumbing the pipes were erected first, the partitions afterward. The water pipes are exposed on the ceilings of the kitchen and butler's pantry, and the soil pipes, 4 in. in diameter, are also run in chases.

The mantels are built with quarried tile facing and hearths, and the wood mantels are ornamented with panels of pottery. The gas and electric light fixtures are of a most ornate nature, and are made of a composition known as "Dureatta."

All the concrete and mortar was mixed by means of a machine located in the middle of the plot of ground, and was wheeled to the different houses in

barrels, "runways" being constructed to reach the second floors, as indicated in one of the small half-tone pictures.

The heating of the houses is by steam, the position of the radiators being clearly indicated on the floor plans.

In the kitchen of each house is a French combination coal-and-gas range, with elevated gas broiler and oven; also a water boiler which has an inside gas heater.

The range is located between two windows, thus giving plenty of light on both sides—a feature not always considered in the planning of a kitchen. The chimney is built with an 8 x 8-in. smoke flue and an 8 x 12-in. vent flue.

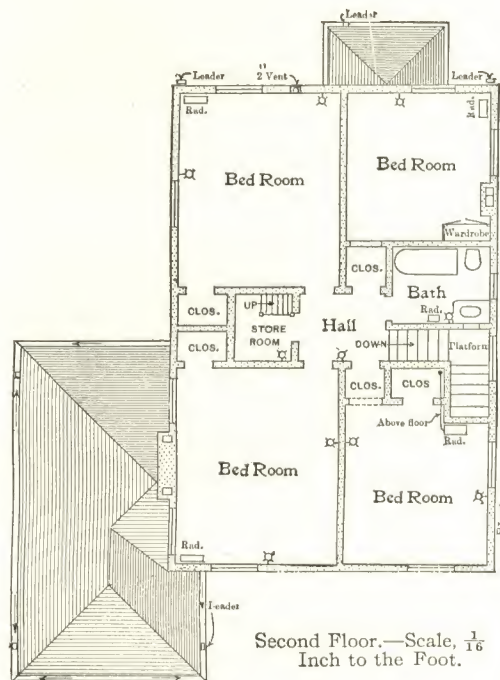
The kitchen pantry is equipped with a series of dressers, a sink with drain boards; also a plate warmer conveniently located.

The owners of these houses, which are being built in Orange, N. J., are the Kellogg-Green Company, and the contractors for the work are Bliss & Griffith, 225 Fifth avenue, New York City. It is interesting to note the fact that little more than a year ago this firm built at University Heights, the first private dwelling of hollow tile within the limits of New York City, for the owner, Professor James E. Lough, of New York University. It is needless to state that at the time, this use of hollow tile attracted a great deal of attention on the part of architects and builders.

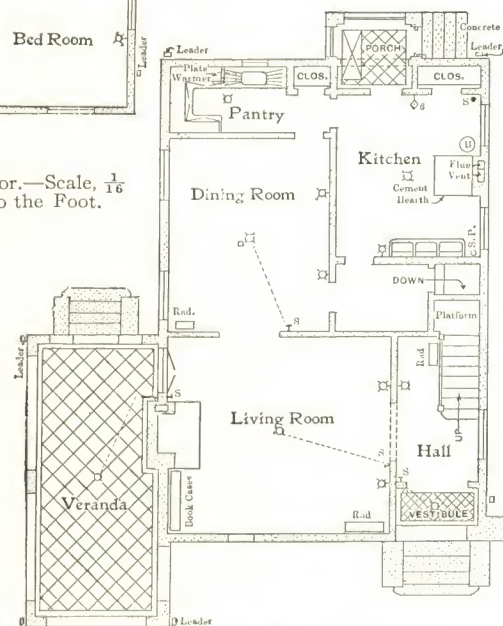


# DESIGN No. 16

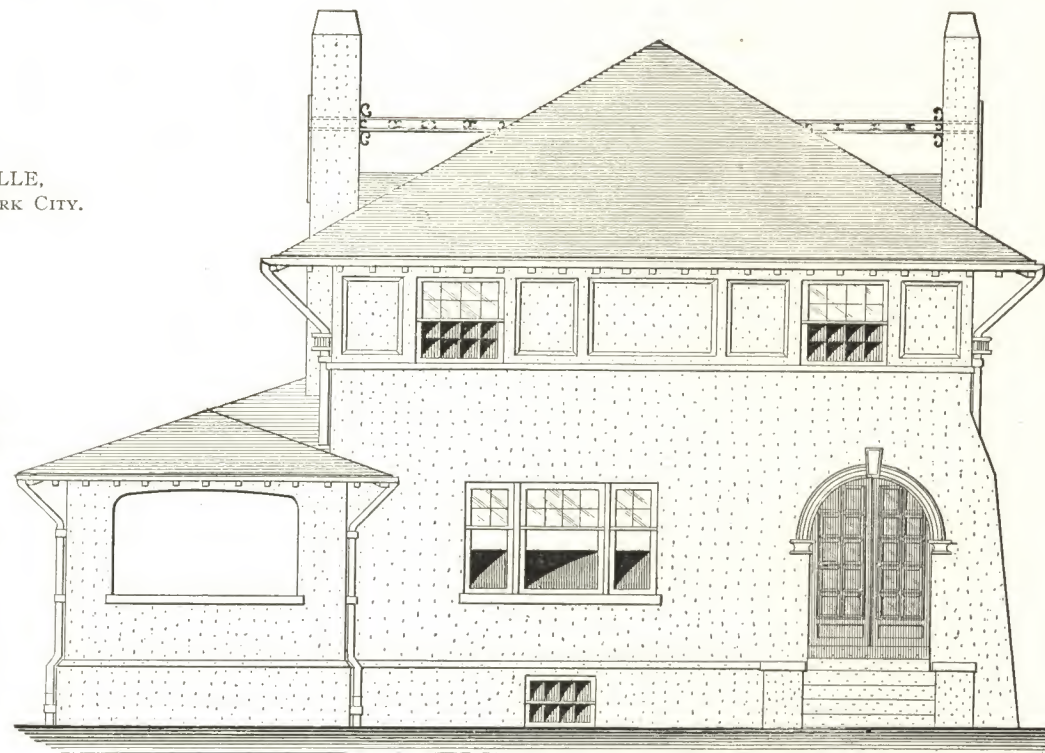
ARCHITECTS:  
MANN & MACNEILLE,  
NEW YORK CITY.



Second Floor.—Scale,  $\frac{1}{16}$  Inch to the Foot.

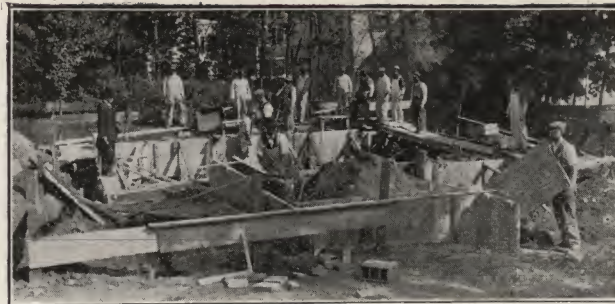


First Floor.—Scale,  $\frac{1}{16}$  Inch to the Foot.



Front Elevation.—Scale,  $\frac{1}{8}$  Inch to the Foot.

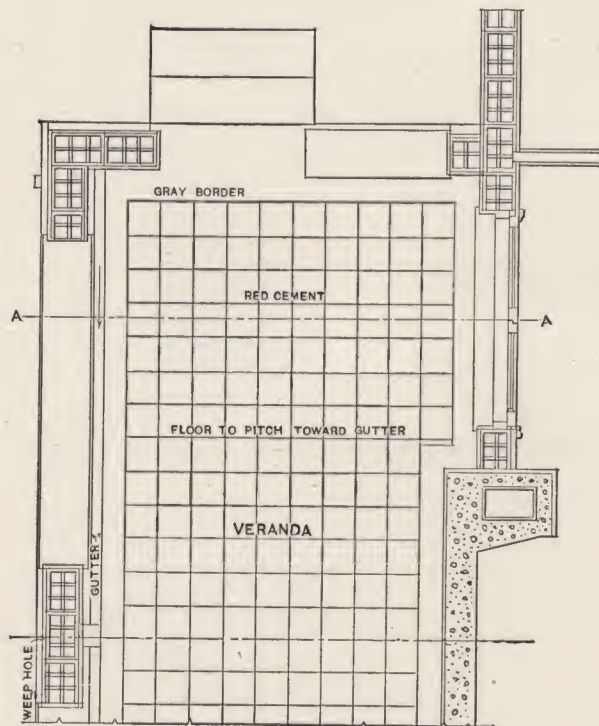
# DESIGN No. 16



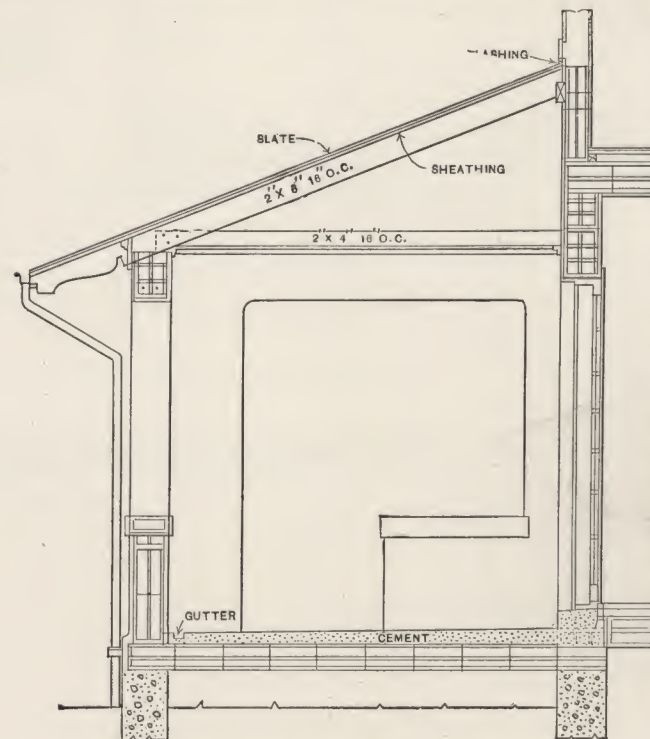
Terra Cotta Tile in Dwelling Construction.—Placing the "Forms" and Preparing the Foundation Walls.



View Showing the Foundation Walls Completed and Main Floor Laid.



Plan of Veranda.—Scale,  $\frac{1}{4}$  Inch to the Foot.



Vertical Section of Rear Porch on Line B-B of the Plan.—Scale,  $\frac{1}{4}$  Inch to the Foot.



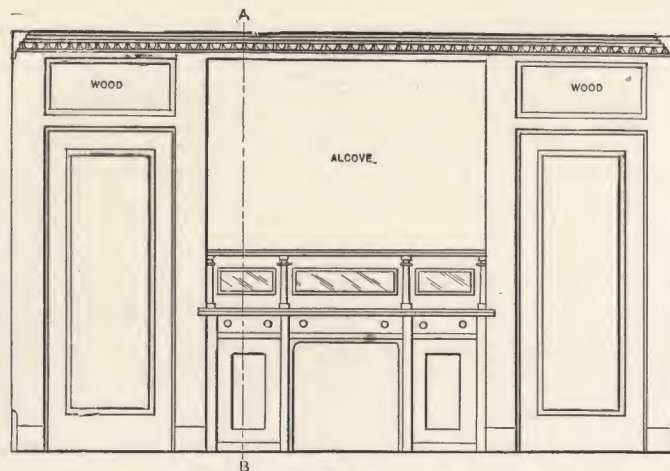
House with Tile Walls Laid to the Second Story and Showing Arrangement of "Run-way."

*Miscellaneous Constructive Details.*

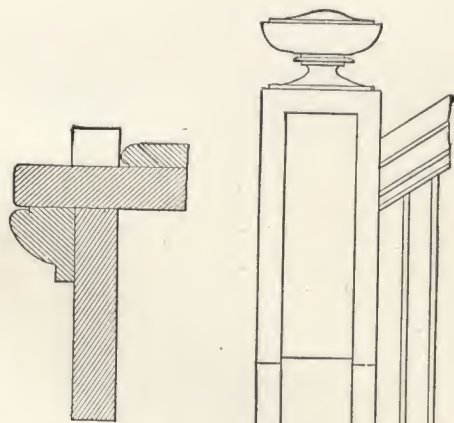
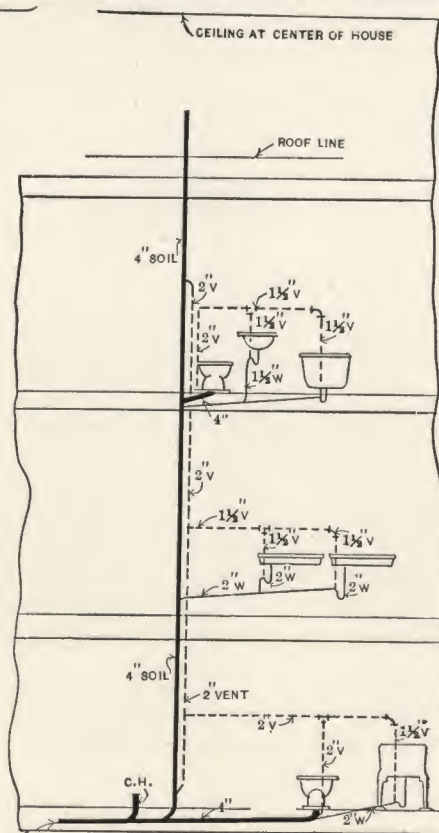




Two Houses Under Roof, and Showing First Coat of Exterior Plaster Applied.

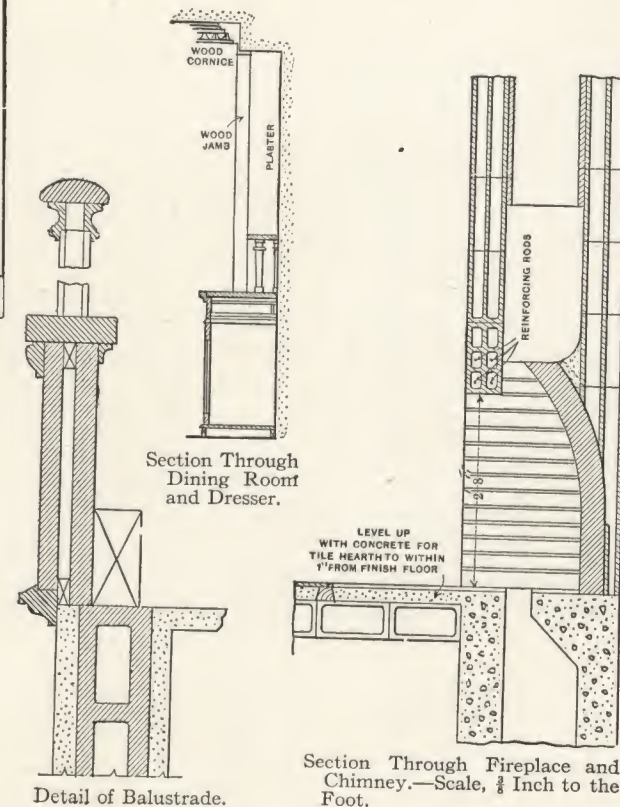


Elevation in Dining Room, Showing Built-in Dresser.



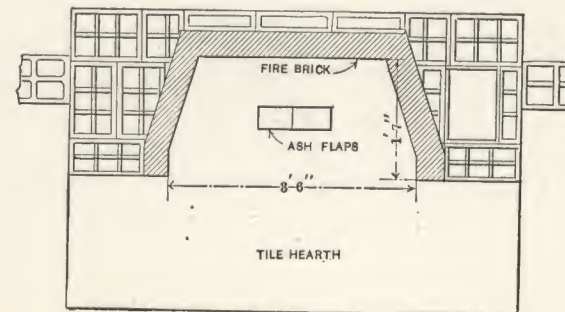
Detail of Window Stools.  
Scale, 3 Inches to the  
Foot.

Detail of Newel Post.

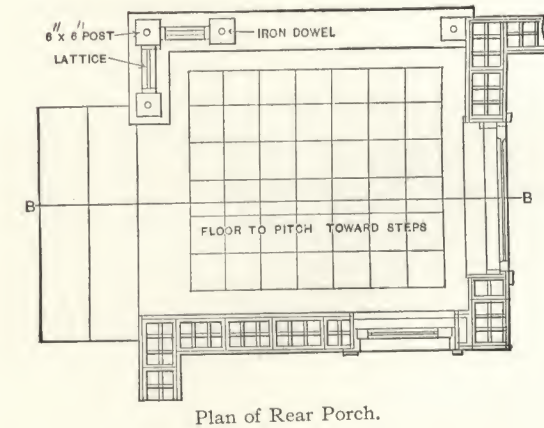
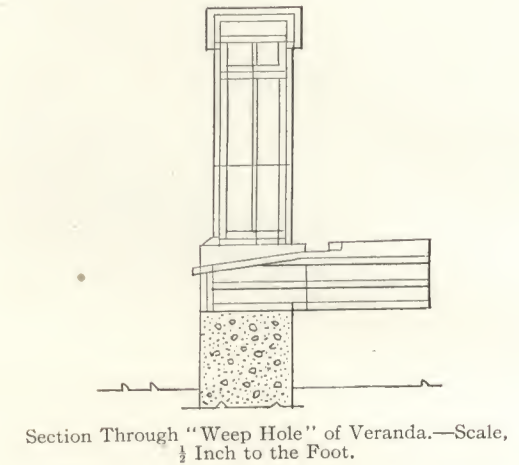
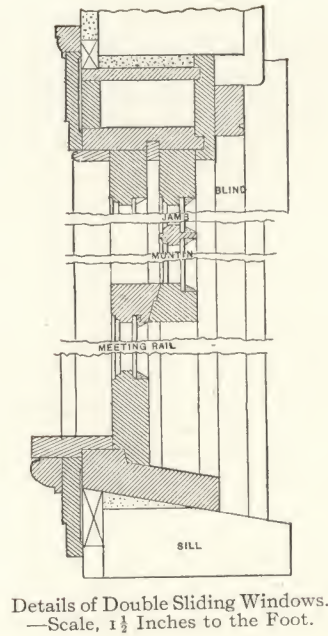
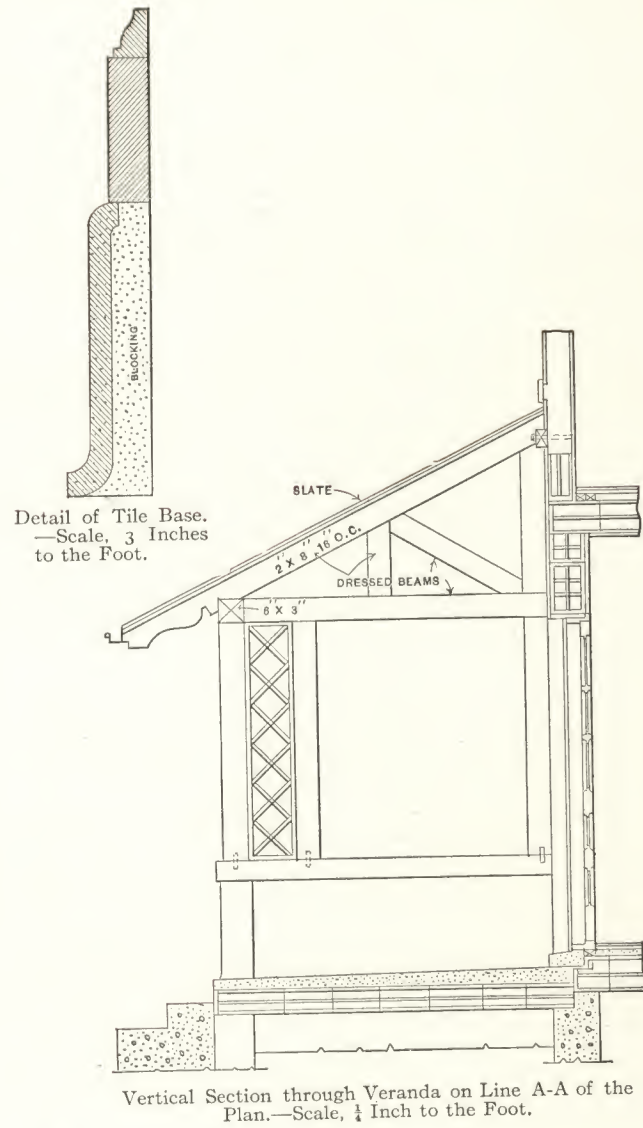


Detail of Balustrade.

Section Through Fireplace and  
Chimney.—Scale,  $\frac{1}{2}$  Inch to the  
Foot.



# DESIGN No. 16





# DESIGN No. 17

\$11,000

AN excellent example of a cement-coated dwelling, and one which in its various details cannot fail to interest many of the readers of this book, constitutes the subject of design No. 17. The residence is picturesquely situated in one of the many delightful suburbs of which the city of Cincinnati can boast and has attracted much attention. It is erected upon a site having an exceedingly steep grade so that while it is two stories in height at the front, it is three full stories at the rear. By reason of its position the matter of excavation for foundations and cellar was reduced to a minimum; it was only necessary to remove a small portion of earth toward the front in order to give a large basement, containing a capacious billiard room, laundry, vegetable cellar, boiler room, cold cellar and store room.

An inspection of the half-tone engravings presented taken in conjunction with the many details and plans will afford the reader an excellent idea of the appearance of the finished residence as well as of the interior arrangement and trim. The first-floor plan shows the entrance located at the extreme left of the building and communicating with a vestibule from which one may directly reach the main hall on the one hand and the kitchen on the other. There is also a side entrance giving direct access to the kitchen.

The hall occupies the central front portion of the house and from it rises stairs leading to the second story. Opening from the hall toward the front is an alcove lighted by a triple window and having on one side a seat with hinged cover, and on the other a desk. Below the stairs and at the left of the alcove is a coat closet. A view in the hall looking toward the alcove and stairs is a feature of the illustrations presented herewith.

At the right of the hall is the large living room with open fireplace flanked on either side with bookcases. Directly beyond the hall is the dining room having direct communication with the kitchen and the loggia with its wooden floor, at the right. The kitchen is equipped with sink, a commodious pantry, a china case, and has a flight of stairs leading to the second floor. Directly under these stairs is the flight leading to the basement.

On the second floor are three sleeping rooms, a maid's room, a sewing room, also a bath room and toilet. The separation of the bath room and toilet is an excellent idea and one highly to be commended.

The outside walls of the house are of cement of a 1:2:3 mixture applied to "Imperial" expanded metal lath, the latter being stapled to the wooden studs of the frame. A rough cream colored finish of "Stone-kote" was used and was furnished through the Moores-Coney Company, St. Paul Building, Cincinnati. The entrances from the front and side porches have marbleized fiber floors and the steps are of the same material. The roof is covered with cypress shingles stained.

The floor joist are 2 x 12 in., the ceiling beams 2 x 6 in., and the rafters 2 x 8 in. The floors are double, the rough or sub-floor being of  $\frac{7}{8}$  by 2 in., yellow pine, while the finish floors are of  $\frac{7}{8}$  in., oak. The inside finish is oak for the first floor and curly birch for the bed rooms. The bath room is wainscoted 4½ ft., high and it as well as the kitchen, pantry, and toilet have marbleized fiber floors. The bath room is equipped with extra large tub with shower bath facilities, a stationary wash stand, medicine cabinet, and a small linen closet; the principal linen closet is in the hall. There are two toilets, one on the second floor separated from the bath room as already pointed out and the other in the basement. The plumbing fixtures were supplied by the Crane-Hawley Company.

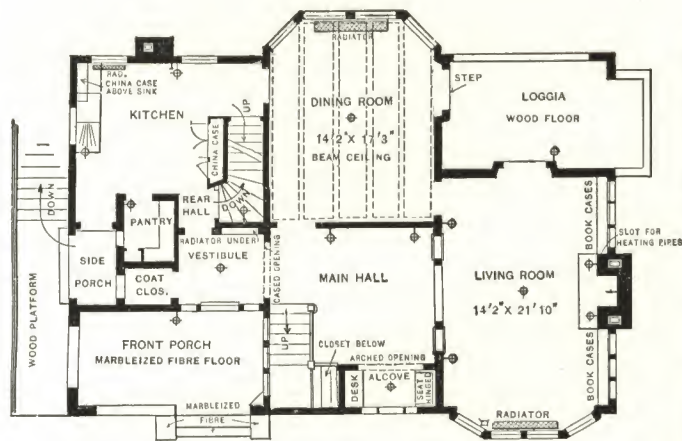
The house is heated by hot water, the position of the boiler being clearly indicated on the basement plan, while the location of the radiators is shown on the first and second floor plans. The boiler was made by the Pittsburgh Water Heater Company, Pittsburgh, Pa., and was supplied through its local branch.

The residence illustrated and described is that of Samuel A. Whitaker, and would cost in the neighborhood of \$11,000.00, according to the percentage of profit charged by the architect. It is located on Carnation Avenue, Price Hill, Cincinnati, Ohio, and was erected in accordance with plans prepared by architects Elzner & Anderson with offices in the Ingalls Building, Cincinnati.

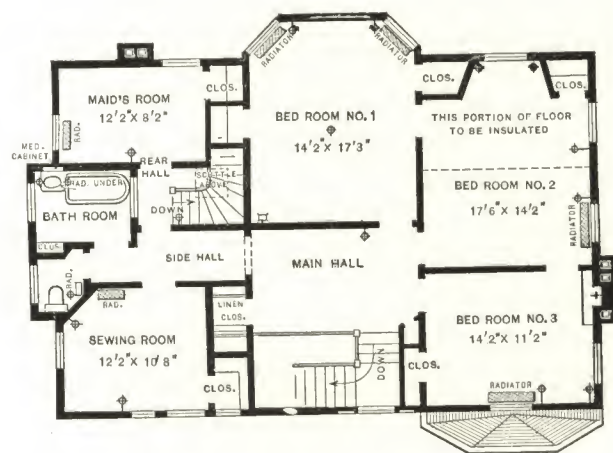
The building contractors were McMiller & Taft, Central Avenue, Cincinnati, and the contractor for the heating and plumbing installations was Henry Niemes of Cummins ville, Cincinnati, Ohio.







First Floor Plan.—Scale  $\frac{1}{16}$  Inch to the Foot.



Second Floor Plan.—Scale,  $\frac{1}{16}$  Inch to the Foot.

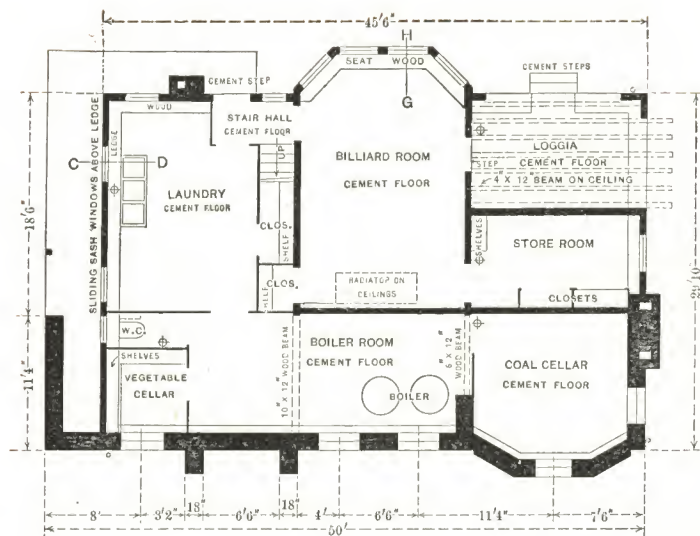


The Front Approach to the Residence of Mr. Samuel H. Whitaker.

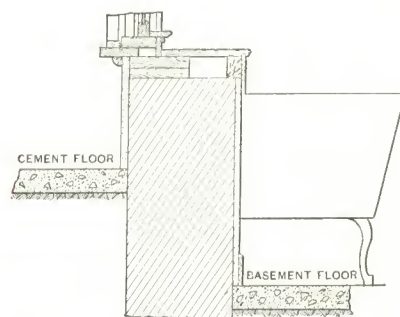
ARCHITECTS: ELZNER & ANDERSON, CINCINNATI, O.



# DESIGN No. 17



Basement Plan—Scale,  $\frac{1}{16}$  Inch to the Foot.

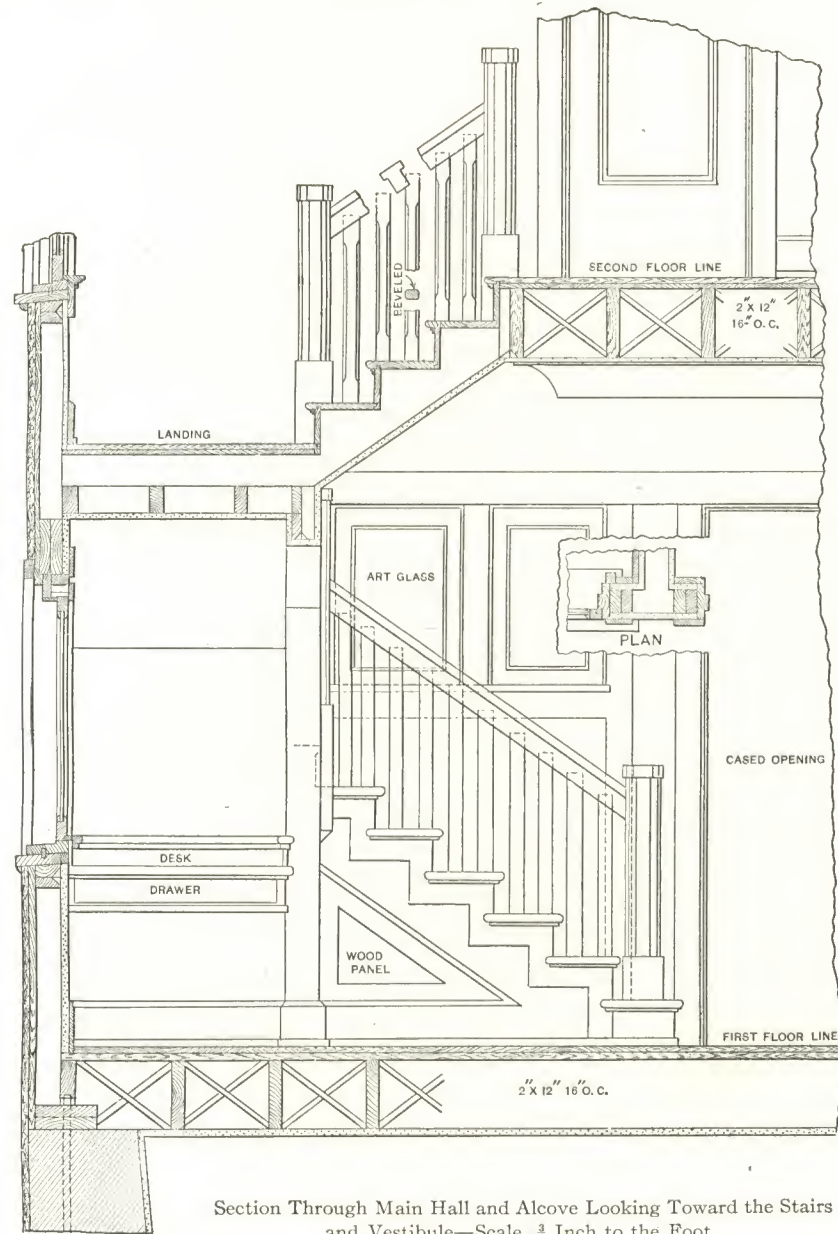


Section of Basement Wall on Line C-D of the Plan.  
Scale,  $\frac{3}{8}$  Inch to the Foot.

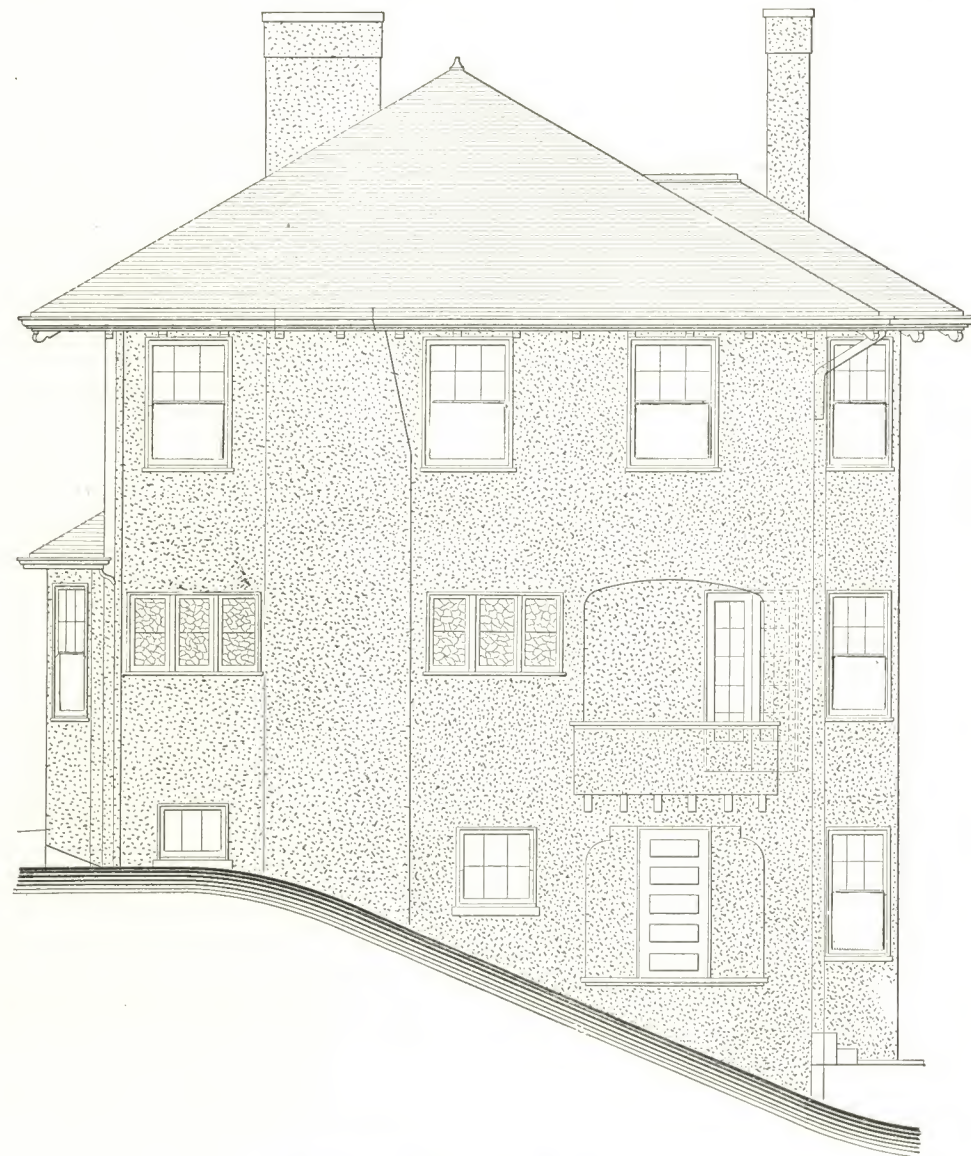


Front or North Elevation of the House—Scale,  $\frac{1}{8}$  Inch to the Foot.



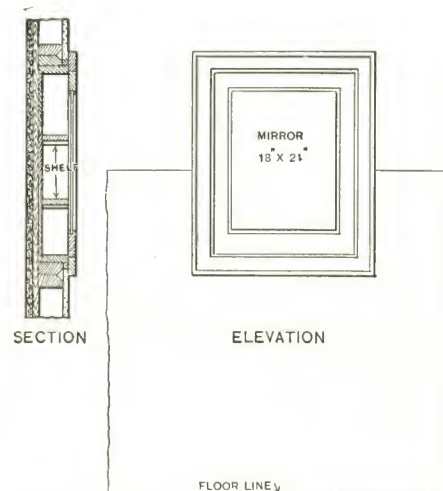


Section Through Main Hall and Alcove Looking Toward the Stairs and Vestibule—Scale,  $\frac{3}{8}$  Inch to the Foot.

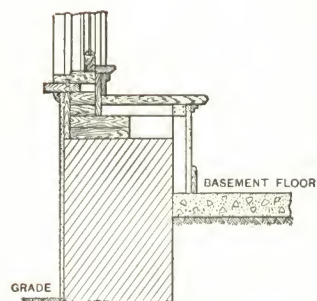


Side, West, Elevation.—Scale,  $\frac{1}{8}$  Inch to the Foot.

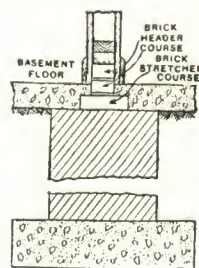




Detail of Medicine Cabinet in Bath Room—Scale  $\frac{3}{8}$  Inch to the Foot.



Section Through Outside Walls on Line G-H of the Basement Plan—Scale,  $\frac{3}{8}$  Inch to the Foot.

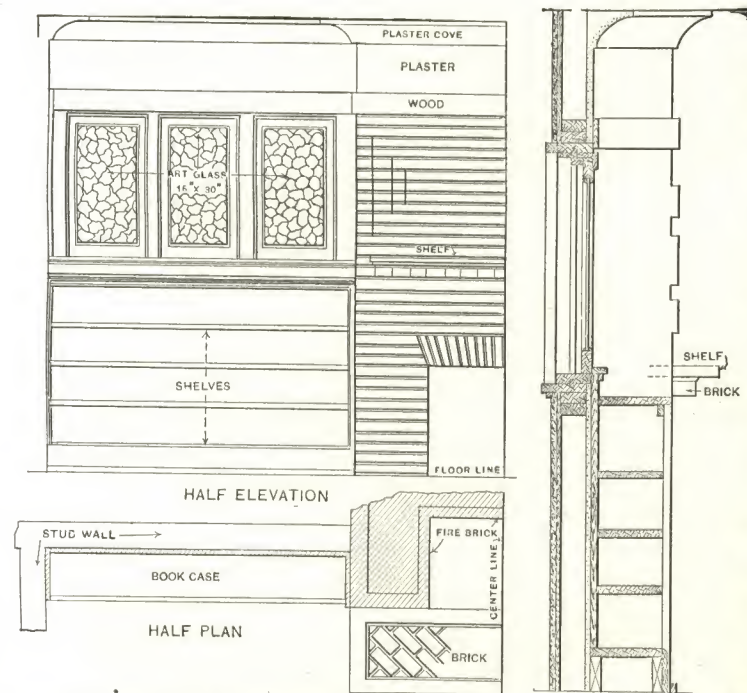


Section Through Foundation Walls Under Billiard and Boiler Rooms in Basement—Scale,  $\frac{3}{8}$  Inch to the Foot.



View in Main or Stair Hall Looking Toward the Alcove with Living Room to the Left.



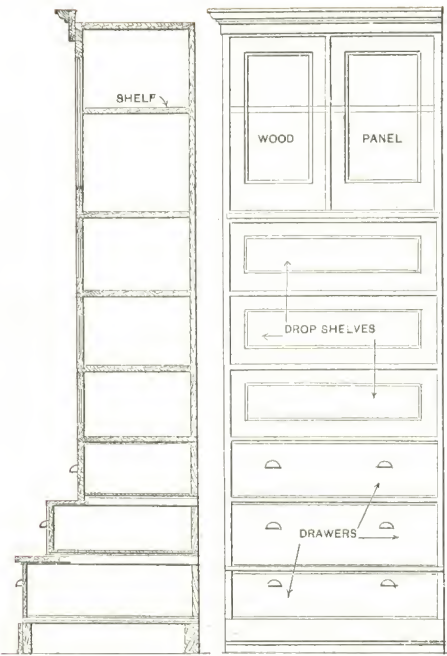


Details of Mantel and Bookcases in the Living Room—  
Scale,  $\frac{1}{4}$  Inch to the Foot.

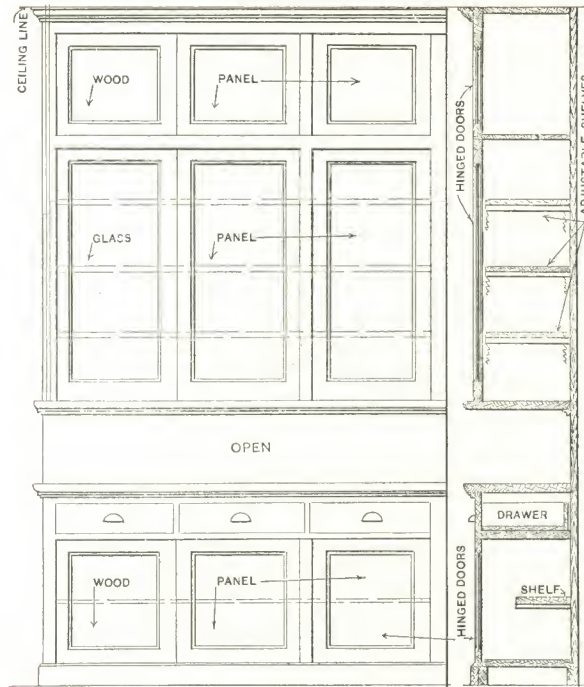
Section of Mantel and  
Bookcases in Living  
Room—Scale,  $\frac{1}{8}$  Inch to  
the Foot.



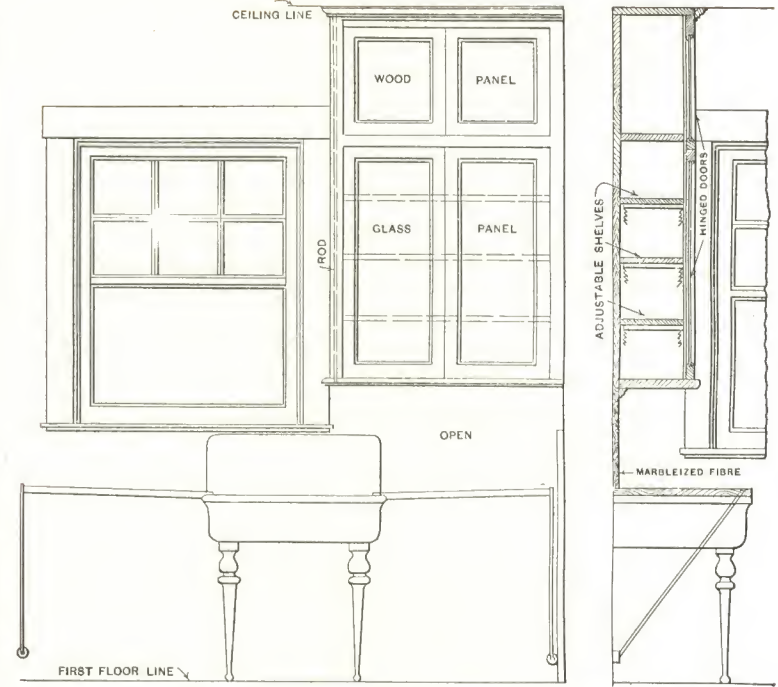
View in Living Room of Residence of Mr. Samuel H. Whitaker.



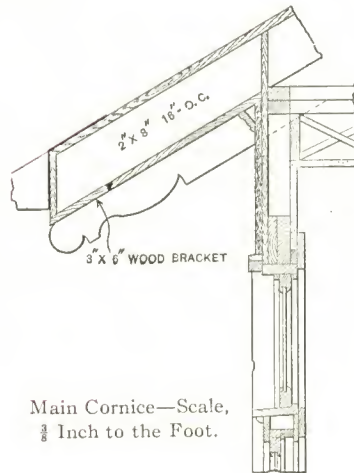
Section and Elevation of Cupboard in Linen Closet—Scale,  $\frac{3}{8}$  Inch to the Foot.



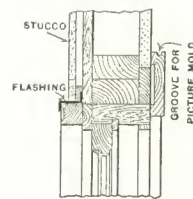
Elevation and Section of China Case in the Kitchen—Scale,  $\frac{3}{8}$  Inch to the Foot.



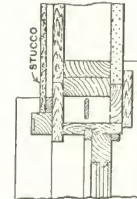
Elevation and Section of China Case over Sink in Kitchen—Scale,  $\frac{3}{8}$  Inch to the Foot.



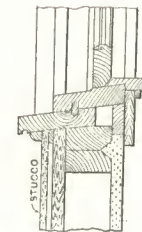
Main Cornice—Scale,  $\frac{3}{8}$  Inch to the Foot.



SECTION THROUGH HEAD

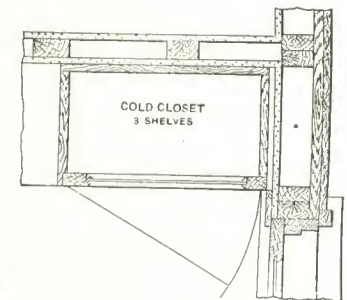


SECTION THROUGH BOX



SECTION THROUGH SILL

Details of Pocket Frame Windows in Stud Walls—Scale,  $\frac{3}{8}$  Inch to the Foot.



Plan of Cold Closet in Kitchen—Scale,  $\frac{1}{2}$  Inch to the Foot.



# DESIGN No. 18

\$11,000

A VERY striking example of half-timbered effects in combination with dark brown brick laid in white mortar joints with trimmings of Bedford stone for the first story, is found in the residence which is illustrated herewith. The second story has the woodwork of a dark brown stain, with the cement plastered panels of light gray. The roofs are of black slate.

The living room extends the full depth of the house and is so situated regarding the points of the compass, that it has the sunlight the entire day. The dining room gets the morning sun, certainly a good feature. The entrance is from a portico reached by a short flight of stone steps, then through a vestibule into a spacious reception hall, from which any of the rooms on the main floor are readily accessible, and also from which rises the main flight of stairs lighted in part by a ground-glass window in the den partition. Between the dining room and kitchen is a commodious pantry, with built-in refrigerator, which may be iced from the rear hall without the necessity of passing through the kitchen. The den is at the rear of the house beyond the main flight of stairs, and isolated as much as circumstances will permit.

The second floor is arranged to give all the sleeping rooms the direct rays of the sun at some portion of the day. There are four of these, each provided with a large closet; adjoining the master's room is a good-sized dressing room. The "nook" directly over the vestibule is almost large enough to be used for a sewing room in an emergency. The central hall is spacious and from it every room, including the bath, is directly reached. A maid's room, a trunk room and a bath room are in the attic.

The building is designed for a corner lot 132 x 50 ft., and the foundation and basement walls up to the grade line are of concrete.

The entrance and veranda steps are of stone, while the veranda floor is of cement, reinforced with bars made by the Trussed Concrete Steel Company, Detroit, Mich.

The basement of the house is not plastered, but all other rooms have two coats of plaster, the second one being a sand finish.

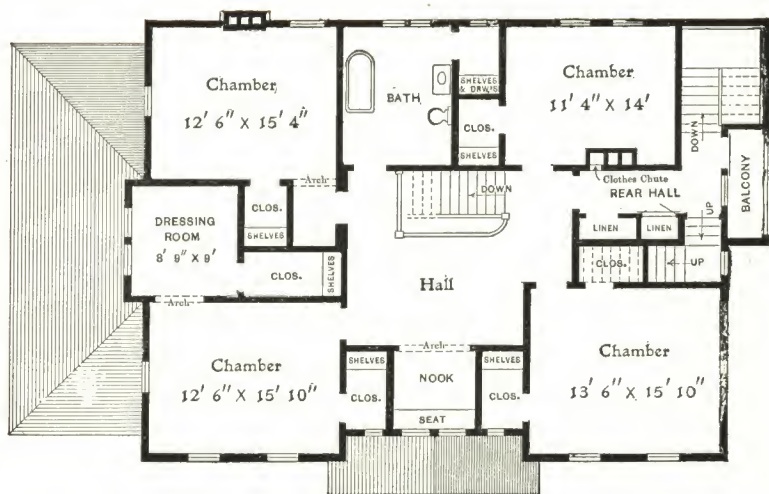
The vestibule, the nook in the living room, and the bath room on the second floor have tile floors and the wainscoting in the bath room is also tile.

The first story living rooms as well as the second story hall have a standing finish of oak; the kitchen pantry, and rear entrance and the balance of the rooms are finished in yellow pine for natural finish, or gum wood for stains and enamels.

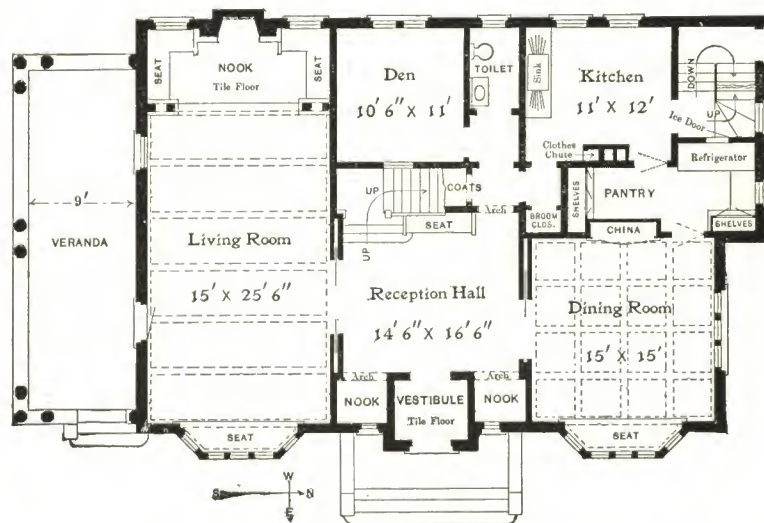
The floors of the living room, dining room, den, and reception hall are of oak, and the balance of the floors throughout the house are of maple. The living room and the dining room have beamed ceilings, as indicated on the main floor plan. The mantel in the living room nook is of buff pressed building brick and colored mortar. A good quality of porcelain plumbing fixtures is used throughout the building.

The house is wired for electricity, and piped for gas. The wiring is in accordance with the rules and regulations of the National Electric Code. All wires are concealed and run in such a manner as not to come in direct contact with plaster or timbers. The two-wire closet system for 110 volts pressure is used, the feed wires running from a point where service will enter the cut-out cabinet. Flush switches are placed in the living room, dining room, reception hall, den, and second story hall. The balance of the house has approved indicating six-ampere snap switches. A four-point automatic annunciator is placed in the kitchen, with wires leading to the front door, the side door, the rear door, and the dining room. These doors are all provided with push buttons, and in the dining room is a floor push.

The residence here shown was designed by George Mutscheller, 136 Mott street, Saginaw, Mich.



Second Floor.



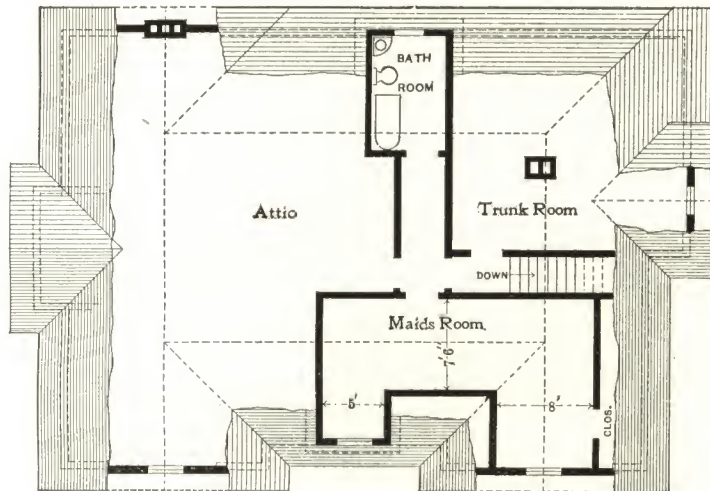
Main Floor.—Scale,  $\frac{1}{16}$  Inch to the Foot.



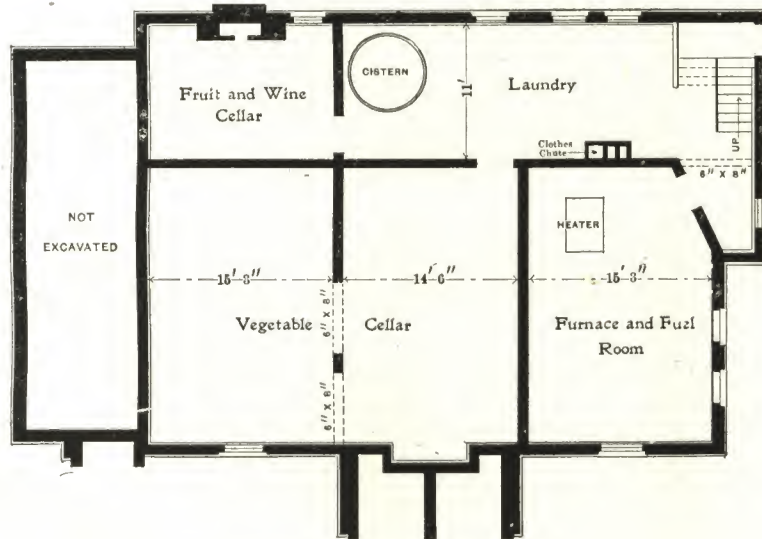
View of the East Elevation.—Scale,  $\frac{3}{32}$  Inch to the Foot.

ARCHITECT: GEORGE MUTSHELLER, SAGINAW, MICH.

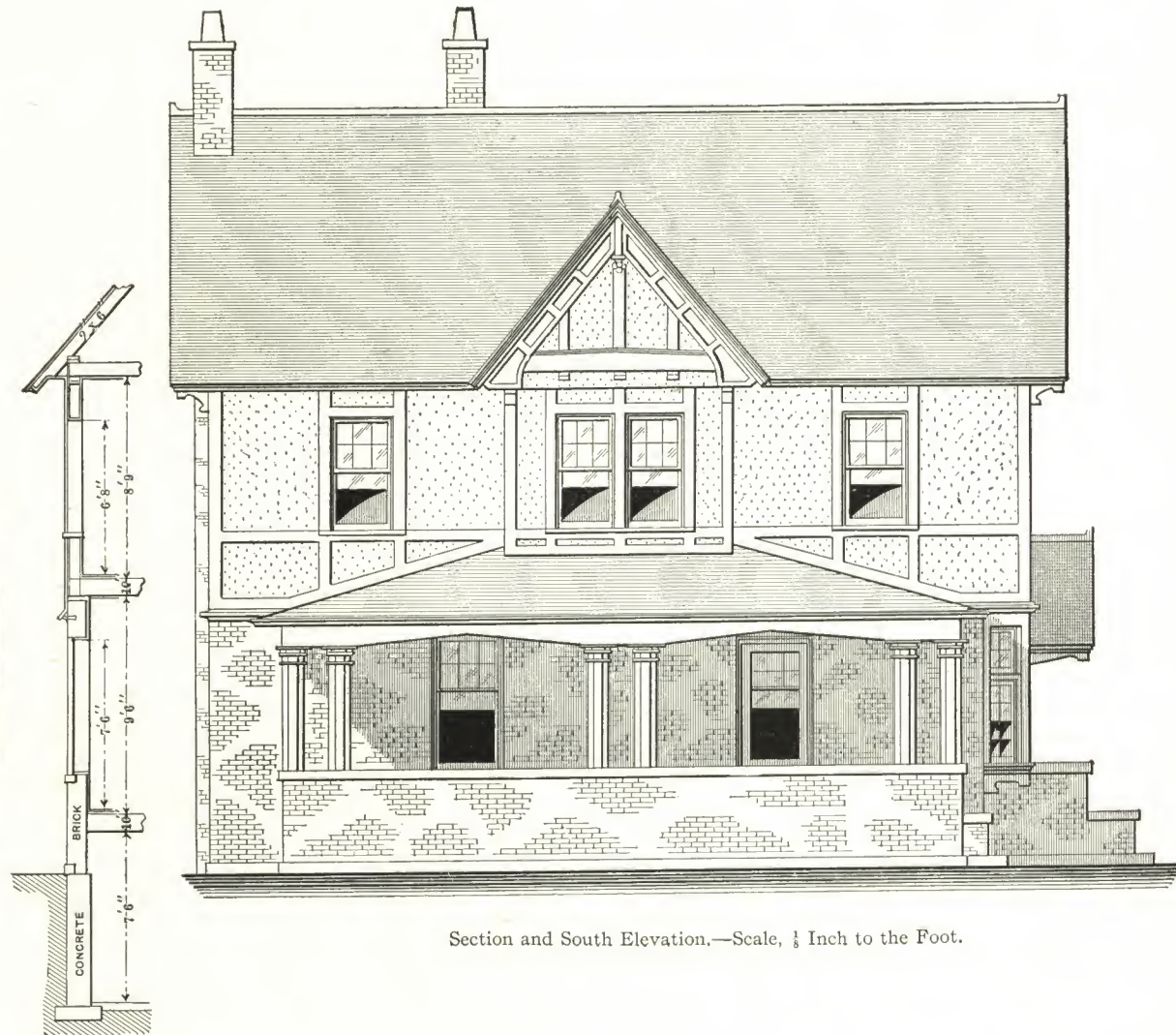




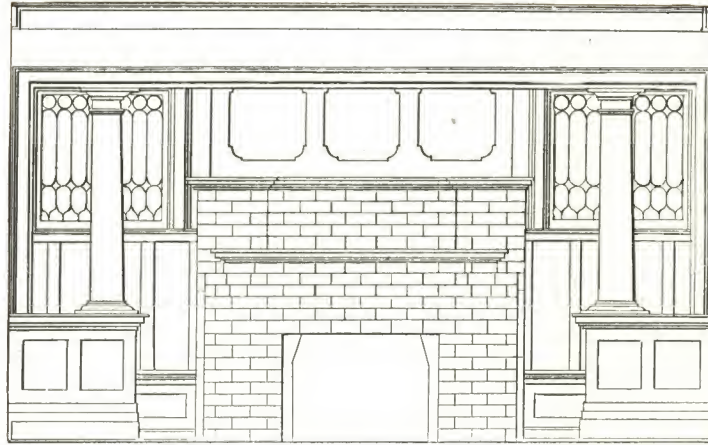
Attic and Roof Plans.—Scale,  $\frac{1}{16}$  Inch to the Foot.



Foundation.—Scale,  $\frac{1}{16}$  Inch to the Foot.

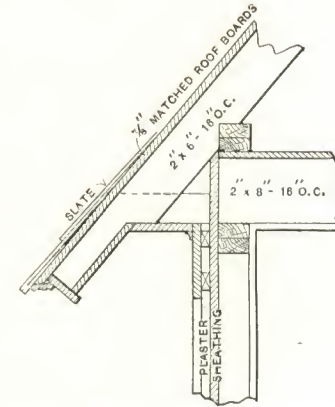


Section and South Elevation.—Scale,  $\frac{1}{8}$  Inch to the Foot.

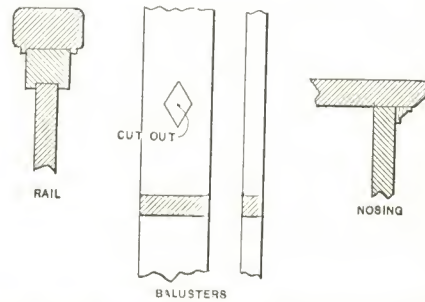


Elevational and End Views of Nook in Living Room.—Scale,  $\frac{1}{4}$  Inch to the Foot.

ARCHITECT:  
GEORGE MUTSCHELLER,  
SAGINAW, MICH.

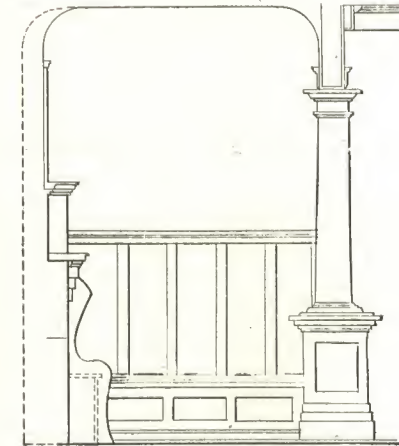


Details of Main Cornice.—Scale,  $\frac{1}{2}$  Inch to the Foot.

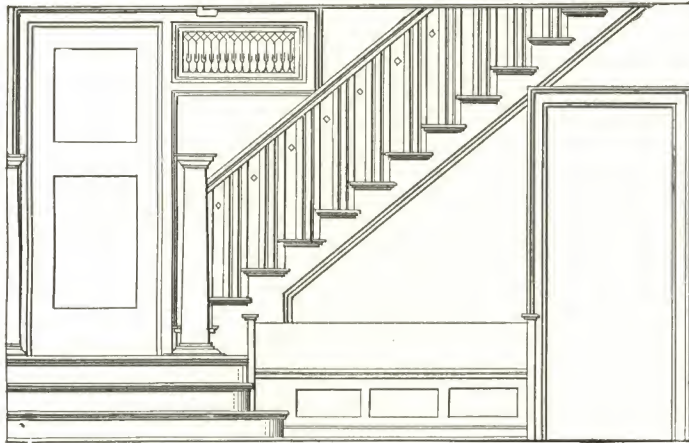


Some Stair Details.—Scale,  $1\frac{1}{2}$  Inches to the Foot.

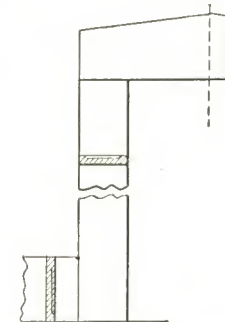
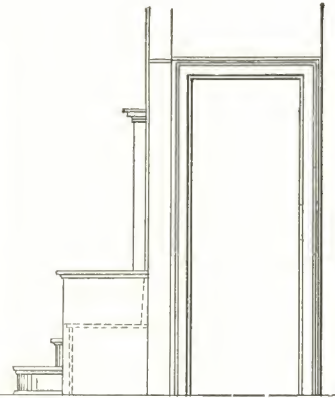
Miscellaneous Constructive Details.



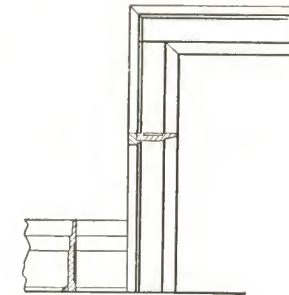




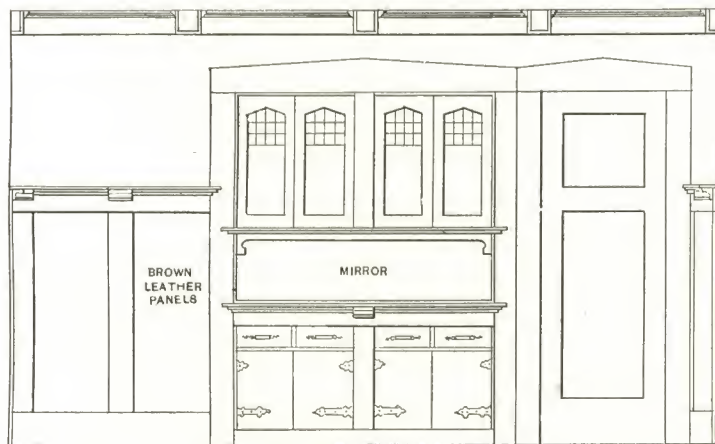
Elevation of Main Stairs with End View at the Right, Showing Style of Trim.—Scale,  $\frac{1}{4}$  Inch to the Foot.



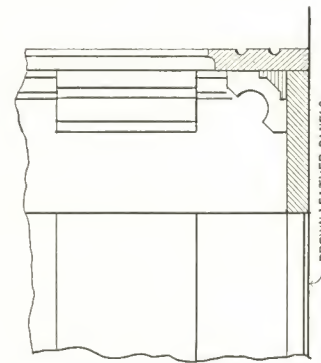
Detail of Dining Room Finish.—Scale,  $\frac{1}{2}$  Inch to the Foot.



Detail of Finish in all Rooms Except the Dining Room.—Scale,  $\frac{1}{2}$  Inch to the Foot.



Elevation in Dining Room, Showing Built-in Buffet.—Scale,  $\frac{1}{4}$  Inch to the Foot.



Detail of Plate Rail.—Scale,  $1\frac{1}{2}$  Inches to the Foot.

Miscellaneous Constructive Details.





# DESIGN No. 19

\$11,000

AMONG the many interesting examples of the application of cement for the exterior walls of a dwelling, is the one herewith, the residence of Dr. M. E. Stephenson at Newton Center, Mass. In this building the walls are of reinforced cement-concrete, of a nature to render the building warmer in winter, and cooler in summer. The frame is solid reinforced concrete, each post and girder containing from four to six rods extending the entire length. Between the posts, the walls are reinforced with metal lath, the cement being applied on both sides, thus giving a solid wall  $2\frac{1}{2}$  in. thick, with the reinforcing metal lath extending through the center. The metal lath is attached to wooden studs placed flush with the corner posts, and then lathed and plastered, giving a dead air space, and preventing dampness on the interior of the building. The detail representing a horizontal section through the outer wall, clearly indicates the method of construction.

For the 9-in. foundation walls, a 1:2:4 mixture was used, while for the walls above grade, the mixture was 1:3:5.

The roof is covered with pressed cement tile, and the general effect produced may be noted from an inspection of the photographic reproduction.

The girders are 6 x 10 in.; the first and second floor joist 2 x 8 in.; studding for all bearing partitions 2 x 4 in.; for closets and cross partitions 2 x 3 in., and the rafters are 2 x 8 in. All floors are made double, the finish floors in the dining room, living room, and reception hall are of quartered oak.

The standing finish of the living room is red birch-finished mahogany, while the dining room is golden oak. The living room has a cement stone mantel, and the dining room a built-in china closet. Leaded French glass doors lead from both dining and living rooms to the sun room, the latter arranged with glass windows hung on cords and weights, so that they may be lowered into the basement. The screens are arranged the same way, and come up in place of the windows.

The doors of the main rooms on the first floor are birch-stained mahogany, while the base, standing finish and fluted columns are of white wood, white enameled. All rooms on the lower floor except the kitchen have 8-in. ceiling molding. The standing finish of the rooms on the second floor is white wood, white enameled with red birch doors, except the den, which is

Flemish. The floors are selected hard pine, with the exception of the bath room, which is of tile.

The heating is by vapor low pressure steam, an exhaust ventilator in the den, reaching to the chimney. The vacuum cleaner is in the cellar, and connects by pipes with the different rooms.

At the right of the hall as one enters the house through the vestibule, is the reception room, beyond which rise the main stairs. At the left of the hall is the living room, with its swelling bay window, extending through the second story. Beyond the living room is the dining room, and opening out of both is the sun parlor.

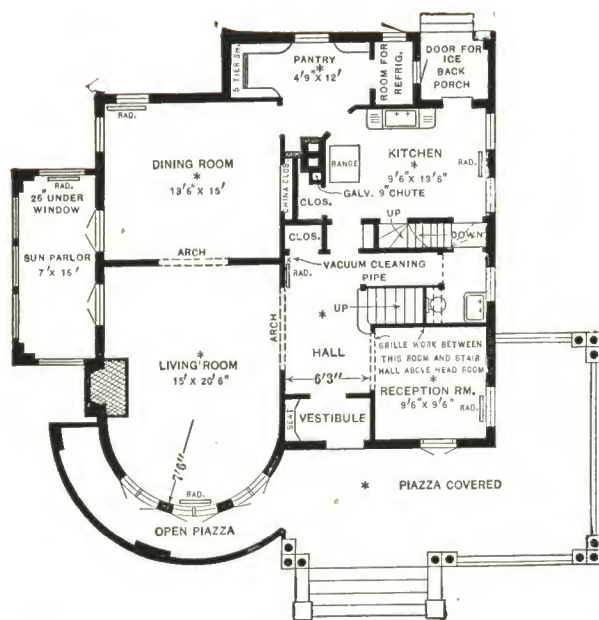
Beyond the main hall and communicating directly with it through double doors is the kitchen, from which stairs lead to the upper floor as well as to the cellar. Communication with the dining room is established through a commodious pantry, out of which opens the room for the refrigerator, so placed that it may be readily iced from the back porch.

On the second floor are four sleeping rooms, a bath room, and a den. Readily accessible from the hall on this floor are the linen closet, and the clothes chute, the latter ending in the basement very near the door of the laundry.

The billiard room is located in the basement, also a work room fitted with a bench, and lighted by a window directly above it.

According to the owner, the cost of the house could be reduced by two or three thousand dollars if the special features incorporated therein and mentioned below were eliminated.

Cellar completely finished and plastered; plate glass windows; copper screens throughout, with extra frames covered with cheese cloth for all sleeping rooms, used in winter; sun-room screens, dropping through channels to basement, with glass windows similarly situated to come up to their place; piping for vacuum cleaning, and extra electric wiring and switches; plugs in accessible places for possible future use of electricity for cooking, heating, etc.; hidden or secret safety vaults; suction ventilation, connected with chimney; hardwood floors, even in the attic; specially designed and executed cement mantels; copper conductors and flashings; combination lighting, and heating by the Broomell system of vapor heat.



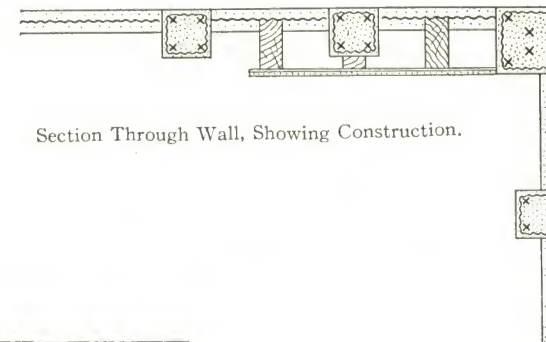
Main Floor.  
Scale,  $\frac{1}{16}$  Inch to the Foot.



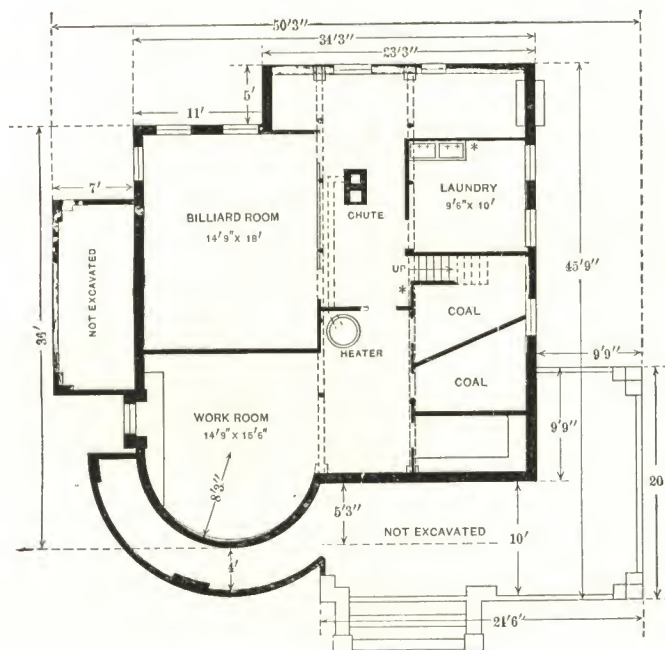
General View of Building as Reproduced from a Photograph.

PLANS DRAWN BY THE OWNER: DR. M. E. STEPHENSON, NEWTON CENTER, MASS.

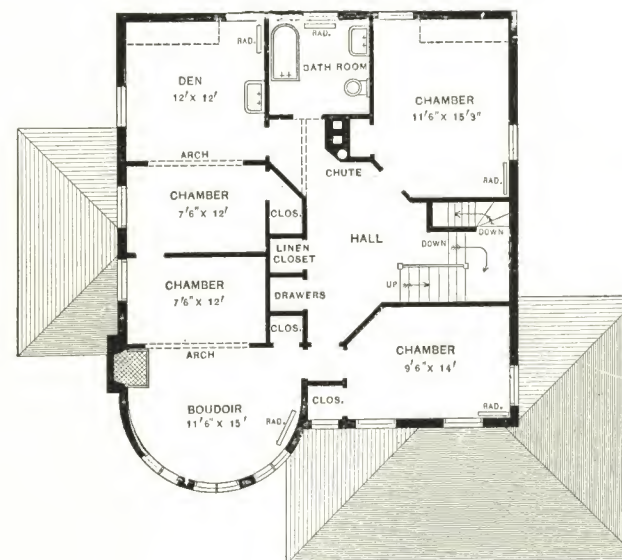




Section Through Wall, Showing Construction.



Foundation Plan.



Second Floor.

Floor Plans.—Scale,  $\frac{1}{16}$  Inch to the Foot.





## DESIGN No. 20

\$12,000

THE half-tone engraving presented here, relates to a cement-concrete residence, with a concrete foundation and underpinning about 8 in. thick, with a footing at the bottom. The walls were built between a frame made with metal lath, fastened to small steel studs 1 in. wide, set in about 1 ft. 4 in. on centers. The concrete was then put in, and when it was set, each side was plastered with cement. The side walls made with 2 x 4-in. studs, placed 1 ft. 4 in. on centers, then there was a three-quarter V-shaped iron, fastened to the outside of each stud, and the metal lath fastened to the latter, with hooks made on the V-irons. The whole was plastered on the outside, and on the inside between the studs or irons, with two coats of cement plaster, so that all of the metal work was entirely embedded in the cement.

The roof has wooden rafters, on which are laid  $\frac{7}{8}$ -in. boards covered with a layer of building paper. The finish is red colored cement tile about  $\frac{1}{2}$  in. thick, which gives a very attractive appearance. The floors are double and rest upon wooden joist, those for the first floors are 2 x 9 in. placed 16 in. on centers. The second floor joist are 2 x 8 in., also placed 16 in. on centers.

The hall is finished in quartered oak, paneled to a height of 3 ft. 6 in. The dining room is also finished in the same way, and has a beamed ceiling. The living room is finished in red birch, with beamed ceiling and pilaster opening into the hall. This opening is  $8\frac{1}{2}$  ft. wide and 7 ft. high and is finished with columns and pedestals. There is also a cased opening between the hall

and den. The den is finished in birch; the remainder of the first floor, and all of the second and attic are finished in hard pine. The bath room has a tile floor and the walls to a height of 4 ft. are also of the tile. The plumbing is first-class open work.

Referring to the floor plans, it will be seen that the approach to the front veranda is from the side, and the entrance to the house is through a vestibule into a commodious hall, out of which opens the living room, den, and the dining room. There is also direct communication between the kitchen and the front hall, by means of a passageway, from which opens a toilet room, and the stairs leading to the cellar. Between the kitchen and dining room there is a well-equipped butler's pantry.

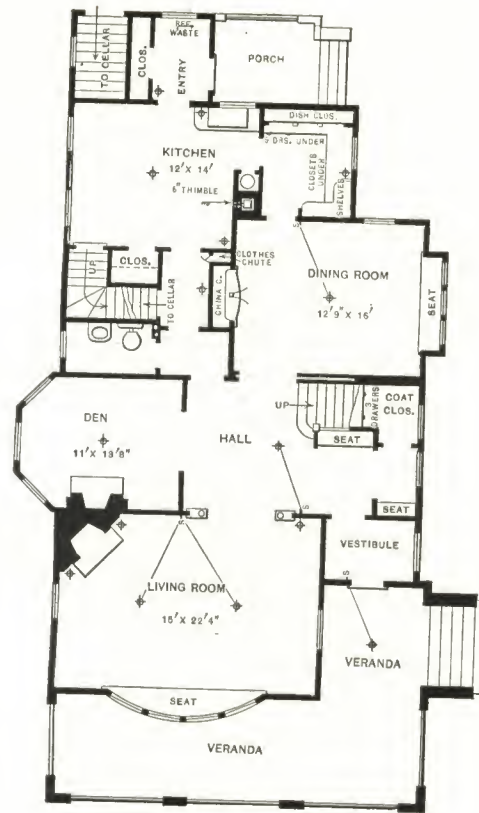
On the second floor are five sleeping rooms, a bath room, and ample closet rooms. The stair hall, it will be noticed, is lighted by a triple oriel window with leaded glass in the upper sash. The attic has two sleeping rooms, a billiard room measuring 16 x 18 ft., a trunk room, and a water closet.

The laundry, with three-part wash trays, a store room, the heating apparatus, bins for range and heater coal, and a water closet, are in the basement.

This very interesting example of cement construction, as applied to a modern residence, was built for Cornelius O'Connell on Pequossett street, River-ton, Watertown, Mass., from drawings prepared by John P. Kingston, architect, 518 Main street, Worcester, Mass.







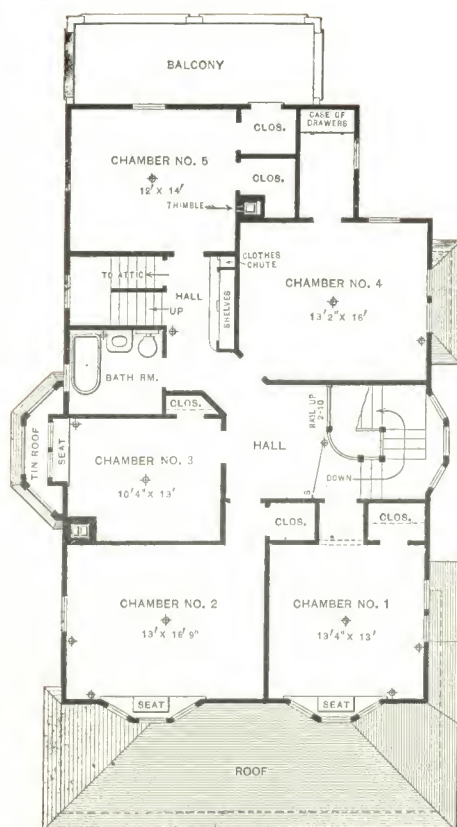
First Floor.

Scale,  $\frac{1}{16}$  Inch to the Foot.



The Cement-Concrete Residence of Mr. Cornelius O'Connell at Watertown, Mass.

ARCHITECT:  
JOHN P. KINGSTON,  
WORCESTER, MASS.



Second Floor.  
Scale,  $\frac{1}{16}$  Inch to the Foot.



A Rear and Side View of the Residence of Mr. Cornelius O'Connell at Watertown, Mass.

ARCHITECT,  
JOHN P. KINGSTON,  
WORCESTER, MASS.



## DESIGN No. 21

\$14,000

IN a journey through the cities, towns, and villages along the borders of the eastern coast of Massachusetts, and more particularly through the suburban sections of the city of Boston, one may find a multitude of interesting examples of comfortable house architecture, ranging all the way from the cozy cottage of the man in moderate circumstances up to the pretentious residence which has involved a considerable expenditure of time and money in its erection. In one of these suburban districts picturesquely situated amid stately elms and towering maples, with its gambrel roof of shingles and main story of "slap-dash" finish, is the house which constitutes the basis of the illustrations presented in this design. It is a roomy house of a type quite common in the New England States, and at first glance one is impressed by the long, low effect produced by the deep overhang of the cornice, the many dormers in the roof, the broad, low windows of the main story, the latticed entrance, and the general air of solid comfort which pervades the entire design. Interiorly, this idea is well borne out in the arrangement of the rooms.

A broad hall extends entirely through the building, with the main flight of stairs rising from a point well toward the rear and amply lighted by a double window at the landing midway to the second story. Just the way this is treated is shown in the view of the hall looking toward the stairs, presented on another page. Underneath the stairs is a coat closet lighted by a rear window which gives out upon the west porch. Opening from the hall at the left as one enters the house is the living room, which occupies the entire end of the building, and a view in it looking toward the open fireplace and in the direction of the four windows directly over the bookcases is found among our half-tone engravings.

At the right of the hall is the dining room, a view of which we also show, while beyond is the den fitted with bookcases and lighted by a double

window looking toward the west. Communication between the dining room and kitchen is established through a well-equipped china closet, with a window directly over the sink, where light is always required. From the kitchen, stairs lead to the second story and a flight also gives access to the cellar.

Not the least remarkable feature of the house is the combining of seven sleeping rooms and three baths on the second floor, all of which, though some are small, are conveniently arranged, well ventilated and furnished to advantage. The minor objection of passing through the spare chamber to the rear hall is offset by the statement that it was the owner's preference. One of the interior views shown on another page is in chamber No. 4, and is looking toward the open fireplace with the double dormer window at the extreme right. The two sleeping rooms and bath room for the servants are at the end of the house.

In the treatment of the exterior the builders, for the sake of both quality and cost, did not apply lath to the studding and back plaster, as is often done, but used No. 19 Clinton wire cloth,  $\frac{1}{2}$ -in. mesh, on  $\frac{7}{8}$ -in. furring, placed 12 in. on centers; and to this they applied three coats of Portland cement and sand. The mixture varied from 1:2 to 1:3, to which was added about 25 per cent., of lime putty to facilitate the handling. The first coat was well haired; the second coat was the same mixture without hair, and the third coat was the "slap-dash" finish made as white as possible by the addition of a larger proportion of lime.

The foundation walls and underpinning throughout, including area walls, retaining walls, footings of all piers and chimneys, as well as the trench walls in the cellar, are of concrete composed of 1 part Portland cement, 3 parts sand and 5 parts screened gravel. The steps at the east and north entrance are formed with the adjoining walls, and bonded to them with twisted steel rods



## DESIGN No. 21—Continued

built in, 12 in., on centers. The exposed surfaces of the underpinning are finished with outside stucco, while the exposed caps of the curbs of the trench walls and steps at the entrances are finished with granolithic, composed of "Medusa" white cement and white marble dust. The east or front porch is paved with select water-struck brick, laid on edge in herringbone style resting on a bed of sand over a concrete base. On the foundation plan will be noted the position of the 4-in., concrete filled Lally pipe columns with cast-iron caps and bases.

The cellar has a cement concrete floor 3 in., thick with a reinforced concrete slab over the heater trench, and a wooden floor laid on sleepers bedded in the concrete in the laundry.

The chimneys are lined the full height of all flues with 8 x 12-in., fire-clay, except the one for the living room fireplace, which has a 12 x 12-in., flue. The fireplaces are built of water-struck brick laid in colored mortar with fine effect.

The framing timber is of spruce, the sills being 6 x 6 in., mortised at angles, painted on the underside and well bedded in mortar; the girders are 6 x 10 in., the posts and girts 4 x 8 in., the studs 2 x 4 in., doubled at doors and windows, the braces 3 x 4 in., the floor joist 2 x 10 in., placed 16 in., on centers and doubled under partitions running parallel with them; the headers and trimmers are 4 x 10 in., mortised and tenoned, the curb plates 4 x 6 in., the ridges 2 x 10 in., and the rafters 2 x 6 in., placed 20 in., on centers and doubled at gables and dormers in the usual way.

The vertical walls and gables of the house excepting the walls of the dormers are finished with cement without boarding, as already stated. The upper pitches of the gambrels and the roof of the shed on the north, as well as the porch on the west, are covered with  $\frac{7}{8}$ -in., hemlock boards, while all steep pitches of gambrels as well as the walls of the gambrels are covered with  $\frac{7}{8}$ -in., matched spruce in narrow widths. All matched boarding is covered with two thicknesses of Neponset black building paper. All roofs not coppered, also the sides of all dormers, are covered with cedar shingles laid not over  $4\frac{1}{2}$  in., to the weather on low pitches, and not over 5 in., to the weather on steep pitches and vertical walls. The roofs of the east porch, the basement entrance and flower balcony over the west porch are covered with 16-oz., copper with seams lapped, soldered and secured with copper cleats.

All exterior finish, unless otherwise specified, is of Gulf cypress worked

strictly in accordance with details. Columns are glued up with sections splined together and turned. All overhangs, projecting eaves and piazza ceilings are furred and sheathed with  $\frac{7}{8}$ -in., matched and beaded cypress in 4-in. strips with bed mold in the angles. All overhangs are filled full depth of the floor beams with mineral wool, well packed.

The floors are double, the subfloors throughout the first and second stories being  $\frac{7}{8}$ -in., hemlock not over 10 in., wide. The upper floors in the living room, dining room, the den and the front hall in first and second stories are of selected red birch in 3-in., strips, while the upper floors throughout the remainder of the house, including the laundry, are of rift long-leaf hard pine in 4 in., strips. Between the lower and finish floors is a layer of heavy building paper. The single floor in the attic is of  $\frac{7}{8}$ -in., matched spruce.

Double-hung sash are coped and tipped at the meeting rails and hung with Sampson's "Spot" cord and cast-iron weights to balance. Exterior door frames are of cypress and the sills of oak. All interior doors are "Korelock"  $1\frac{3}{8}$  in., thick of the two-panel type, and veneered with selected red birch. All glazing except the side lights at the front door is of single-thickness glass, while the side lights in question are glazed with crystal plate in heavy lead muntins.

The interior finish in general is white-wood. The trim is plain throughout, architraves and bases being  $\frac{7}{8}$ -in., thick, and with yokes and plinths  $1\frac{1}{16}$  in., thicker and dado cap  $1\frac{1}{16}$  thinner. The entire service portion and rear hall of both floors is sheathed 4 ft., high with matched and V-beaded North Carolina pine in 4-in., strips with 4-in., plain cap.

The living room is sheathed throughout with  $\frac{7}{8}$ -in., black cypress in about 18-in., widths, and divided into panels with  $\frac{1}{2}$  x  $2\frac{1}{2}$ -in., rift cypress rails planted on top showing four divisions in height. All other finish is rift cypress. The bookcase is built to the sill of the casement windows with low base,  $\frac{7}{8}$ -in., shelves,  $8\frac{1}{2}$  in., wide and with uprights and top  $1\frac{1}{8}$  in., thick, projecting  $\frac{1}{4}$  in.

The dining room is lined the whole height of plaster with sized burlap. The yokes continue all around the room and have molded cornice and picture mold. The entire wall is divided into panels with molded and mitered battens planted on. The den is fitted with a bookcase the same as in the living room and is built of whitewood. The china closet, pantry and kitchen are fitted with cupboards, drawers, shelves and other necessary equipment.

The front flight of stairs has 2 x 12-in., strings of spruce placed 12 in.,



## DESIGN No. 21—Continued

on centers, the whole flight having red birch treads and landings  $\frac{7}{8}$ -in. thick, matching the floor in the front hall. The bases, strings, risers and moldings are of whitewood. The newel post is 5 in. square and the corner posts  $4\frac{1}{2}$  in., all plain-turned with molded drops where required.

All exterior woodwork finish, and metal work except copper, including all sash and lead muntins, blinds, etc., is painted three coats of white lead and linseed oil of the specified tints. All shingles are left natural and the outside cypress steps are oiled two coats. The wood finish in the basement is also oiled.

The kitchen has a "Euclid" soap-stone sink  $24 \times 36$  in., in size with 3-ft. draining boards at each end. In the chimney recess is an E. B. Badger 60-gal. copper pressure boiler, and in the laundry is a set of three-part "Euclid" soap-stone washtrays with 18-in. backs. In the pantry is a  $16 \times 24 \times 6$ -in. sink of the Webb Mfg. Company's make, fitted with nickel-plated waste and overflow. Each bathroom is provided with a "Lucania" water-closet, also made by the Webb Mfg. Company, and two of the bathrooms have each a "Hudson" enameled iron tub made by the same concern, supplied through "Melrose" combination bath cocks with  $6\frac{1}{2}$ -in. spread and waste through "Scouro" trap. In the servants' bathroom is a 5-ft. tub with "Belmont" combination cocks. Each of the two main bathrooms has a  $24 \times 20$ -in.,

"Vitreous" earthenware lavatory of the Webb Mfg. Company's make, while the servants' lavatory is  $20 \times 18$  in., supplied through "Belmont" cocks.

The plumbing was installed by Walter B. Wolcott, Newton, Mass., in accordance with the local ordinance which requires, among other things, a continuous waste and vent for every fixture.

The residence illustrated was built for C. B. Gleason, at the corner of Waterston and Ruthven Roads, Newton, Mass., in accordance with drawings prepared by Henry C. Holt, architect, Winchester, Mass.

The house is heated by a well-balanced combination of hot air and hot water installed by Frank P. Anthony, 36 North Center street, Boston, Mass. The architect states that while he generally prefers hot water to hot air, and also a cast-iron heating surface to steel, yet he is always ready to subscribe that the Ridgeway revolving fire pot is "the finest consuming device ever perpetrated," and in this connection calls attention to the fact that the owner of the house has easily revived a fire therein after more than one week of absolute inattention.

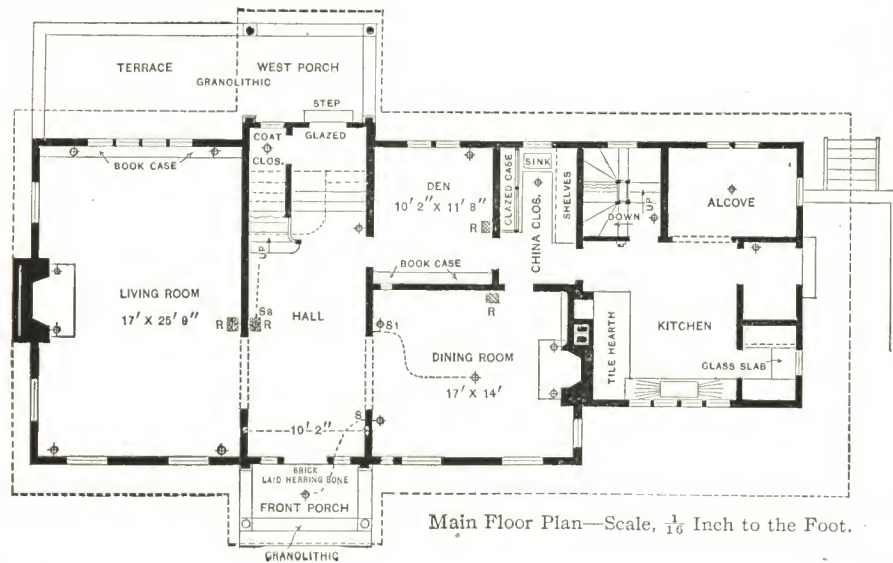
The cement work was executed by M. J. Grady & Son, 95 Milk street, Boston, with most satisfactory results.

The residence complete could be duplicated for about \$14,000.

DESIGN No. 21



Front Elevation—Scale,  $\frac{1}{16}$  Inch to the Foot.



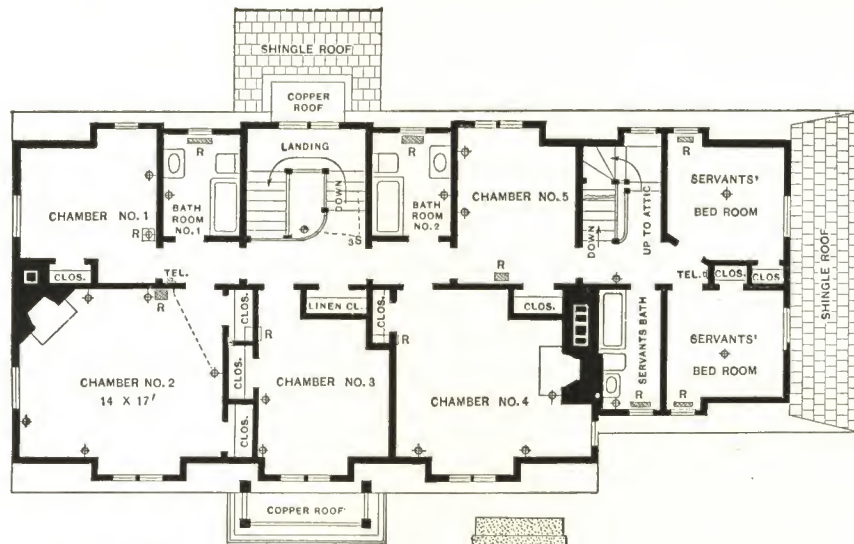
Main Floor Plan—Scale,  $\frac{1}{16}$  Inch to the Foot.



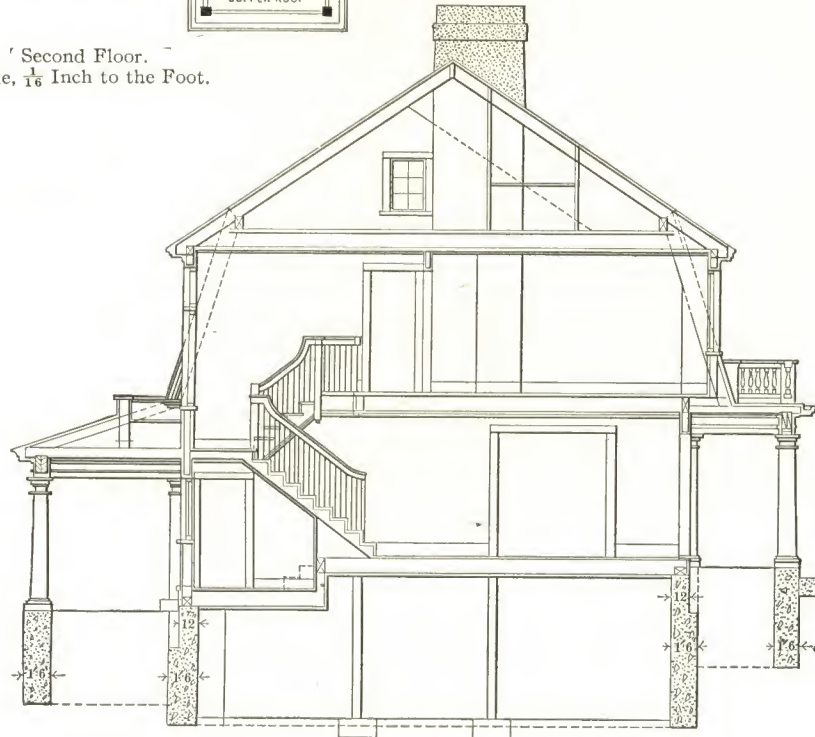
The Cement Coated Residence of Mr. C. B. Gleason, Picturesquely Located in Newton, Mass.

ARCHITECT,  
HENRY C. HOLT,  
WINCHESTER, MASS.





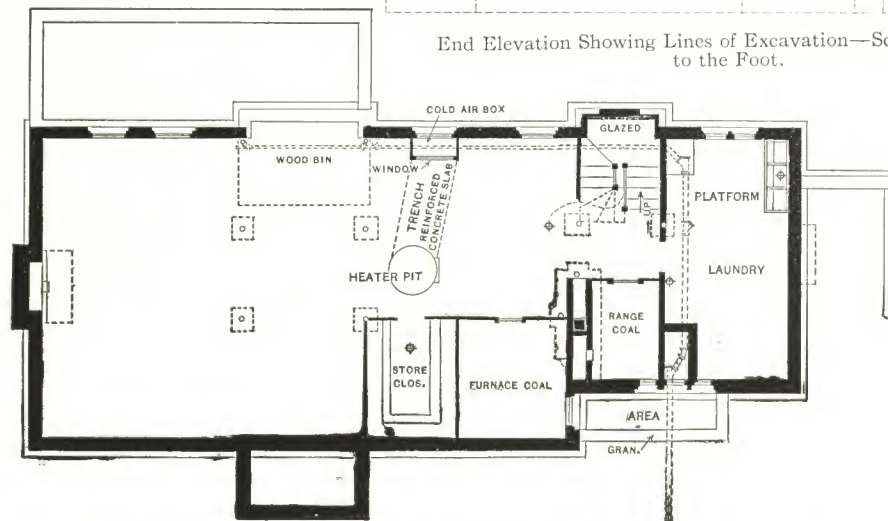
Second Floor.  
Scale,  $\frac{1}{16}$  Inch to the Foot.



Vertical Cross Section of the House—Scale,  $\frac{3}{32}$  Inch to the Foot.



End Elevation Showing Lines of Excavation—Scale,  $\frac{3}{32}$  Inch to the Foot.



Basement Plan—Scale,  $\frac{1}{16}$  Inch to the Foot.





A View in one  
of the Front  
Sleeping  
Rooms.

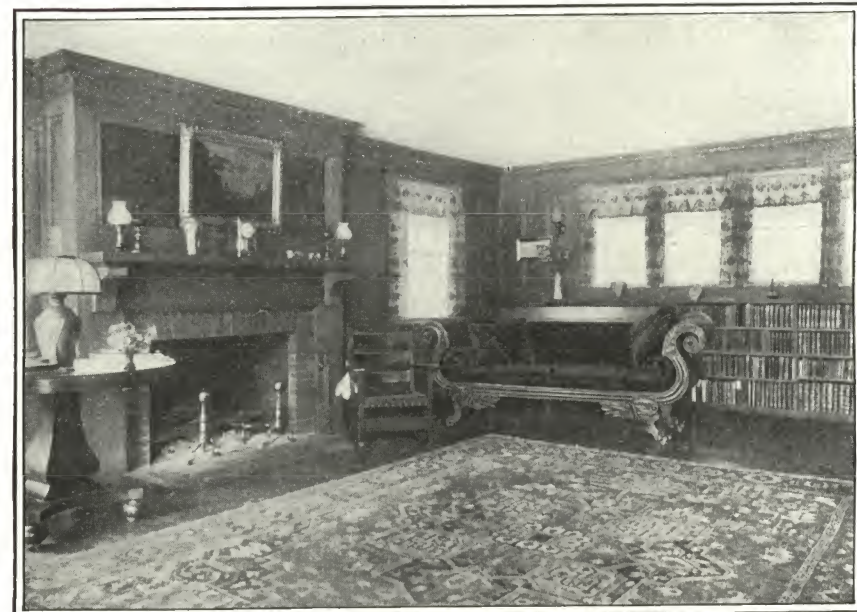


## DESIGN No. 21

View in Main  
Hall, Look-  
ing Toward  
the Stairs.



A View in  
the Dining  
Room.



A Corner in  
the Living  
Room, Show-  
ing the Open  
Fire Place  
with Book  
Cases Under  
the Windows.



## DESIGN No. 22

\$16,500

ON this and the pages immediately following, is described a cement coated residence with several features of interest. Treating the exterior in the manner indicated adds not only to the fire-resisting qualities of a building, but at the same time it is an important economy as regards future cost; such walls do not require painting, and repairs are reduced to a minimum. Again, it is generally conceded that this form of construction tends to render a building warmer in winter, and cooler in summer. The pictures which are presented, show the appearance of the completed house with the garage of the owner immediately at the left, also various interiors of the residence. The first is a view in the stair hall, the next shows the living room and library with its open fireplace and its high triple window. One picture is of the owner's room, taken from a point just at the entrance, and looking towards the fireplace and the triple dormer window. Other light to this room is afforded by the double window at the front. Another picture represents a view in part of the dining room, with its two china cupboards separated by an open fireplace.

Referring to the floor plans it will be seen that the main entrance is in the center of the house, the living room being at the right and extending entirely across the end. It is lighted at the front with a bay window, and at the rear by a triple window over the book shelves. At the right and left of the open fireplace are glazed double doors opening out upon the enclosed loggia. Beyond the main hall is the dining room communicating with the kitchen by a passage way from which opens the china closet, and the stairs leading to the cellar, and on the opposite side are the toilet and the telephone. At the left of the main hall is the reception room, and under the main stairs is a coat closet. The kitchen has opening out of it, a commodious pantry shut off by a sliding door, and the position of the refrigerator is such that it may be iced from the passageway leading from the porch to the kitchen.

On the second floor are four sleeping rooms, a dressing room, a sewing room, and two bathrooms.

The foundation walls of the house are built of local stone laid solid in cement mortar; they are 24 in. thick at the base, and 18 in. at the top, the inside face being plumb. The underpinning is 18 in. thick of selected stone laid in cement with joints raked out. The chimneys are of

Harvard brick with black headers, laid in cement with wide shallow concave joints.

The basement has a floor 3 in. thick with a top finish consisting of 3 in. of cement. Lally iron columns are used throughout.

The entire frame of the house is spruce, and the walls and roof are covered with matched spruce boards. On these is placed black Neponset paper with joints well lapped, and over the paper the walls are furred vertically with 1 by 2 in. strips placed 9 in. on centers. To these strips No. 19 Clinton galvanized iron wire lath is attached with stiffening angles, and to it is applied the "rough cast" exterior cement finish.

In regard to the outside plaster, the scratch coat is composed of one part Atlas Portland cement to three parts clean sharp sand, with sufficient hair for the purpose. The scratch coat was kept wet for such time as was required to allow the cement to thoroughly set. Upon the scratch coat was applied a brown coat composed of one part Portland cement to three parts clean sharp sand. The coat was brought out smooth and even and thoroughly straightened to within  $\frac{1}{4}$  in. of the thickness to which the walls were to be finished. The coat was finally scratched and kept wet until the cement was thoroughly set, and then was allowed to dry before the finish was applied. This finish coat was composed of one part white sand to one part Portland cement, the finish being finely floated to the grain of No. 3 sandpaper.

The roof is covered with extra quality cedar shingles laid  $4\frac{1}{2}$  in. to the weather. All flashings and decks are of 16 oz. copper.

The front porch has concrete curb with center laid in Harvard brick placed flat in cement mortar. The piazza floor is divided with cement bands and borders with 12 by 12 in. Akron red tile laid in cement with wide joints.

The floor framing is 2 by 8 in., 2 by 10 in., and 2 by 12 in. The rafters are 2 by 6 in.; the wall studs and partitions are 2 by 4 in., and the valleys and hips are 2 by 9 in. The under floor is of  $\frac{7}{8}$  by 6 in. square edge hemlock and planed on one side.

All interior walls and partitions are plastered two coats on spruce lath and the ceilings are plastered three coats.

The vestibule is finished with a floor of 4 by 4 in. red tiles with base

#### DESIGN No. 22—Continued

laid in cement, while the walls and wood trim are painted. Glazed doors lead from the stair hall to the living room and to the dining room. The fireplace in the stair hall has marble facing and hearth. The floor is composed of  $2\frac{1}{2}$  in. face quartered oak strips.

The living room has a quartered oak floor with plain oak finish; the walls covered with grass cloth stained brown. The fireplace has cement facings and hearth with brick laid in patterns.

The dining room has quartered oak floor, brick facings and hearth for fireplace, and wainscot and trim, painted. The den has an oak floor with white wood trim finished in a very dark brown. The pantry has a hard pine floor with walls painted and the finish varnished. The kitchen also has hard pine floor and North Carolina pine finish, the walls painted.

The bedrooms have hard pine floors and painted finish, with brick facings and hearths. The bathrooms and toilet have 4 ft. tile wainscot and tile floors, the walls and finish painted.

The service portion of the house has hard pine floors and North Carolina pine trim varnished.

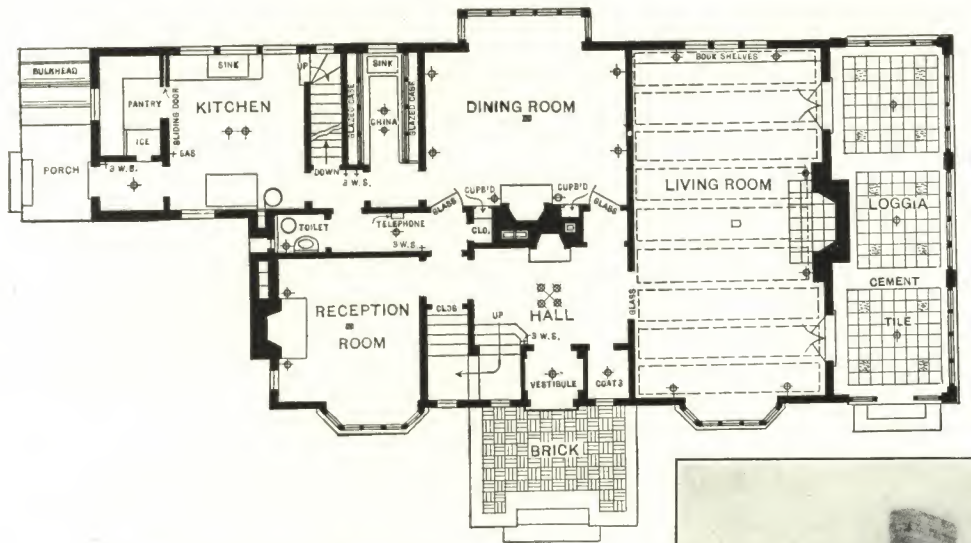
This cement coated residence is owned by Walter M. Libbey, and is located at 19 Prescott Road, Lynn, Mass. It was erected in accordance

with plans prepared by George H. Higgins and Franklin H. Hutchins, associate architects, 345 Fifth Avenue, New York City. The contractors were Campbell Bros., Suffolk Street, Lynn, Mass.

An examination of the picture presented upon the opposite page shows immediately at the left and beyond the latticed fence a one-story structure which is the garage of Mr. Libbey, a front view of the building being presented on another page. The floor plan shows the interior arrangement. It will be seen from an inspection of the plan that at the rear end is a work bench, fitted with drawers and above it is a shelf. The bench is lighted by a window directly over it, and at the right are two lockers. This garage has a spruce frame which is covered by  $\frac{7}{8}$  in. matched spruce boards, and stucco walls similar in construction to those of the house described in the earlier portion of this article. There is a concrete floor 5 in. thick composed of one part cement,  $2\frac{1}{2}$  parts sand and 5 parts stone or cinders. The one inch cement finish is composed of one part cement and two parts sand. The roof is covered with shingles, similar to those used upon the house, and then stained. All interior finish is of North Carolina pine.

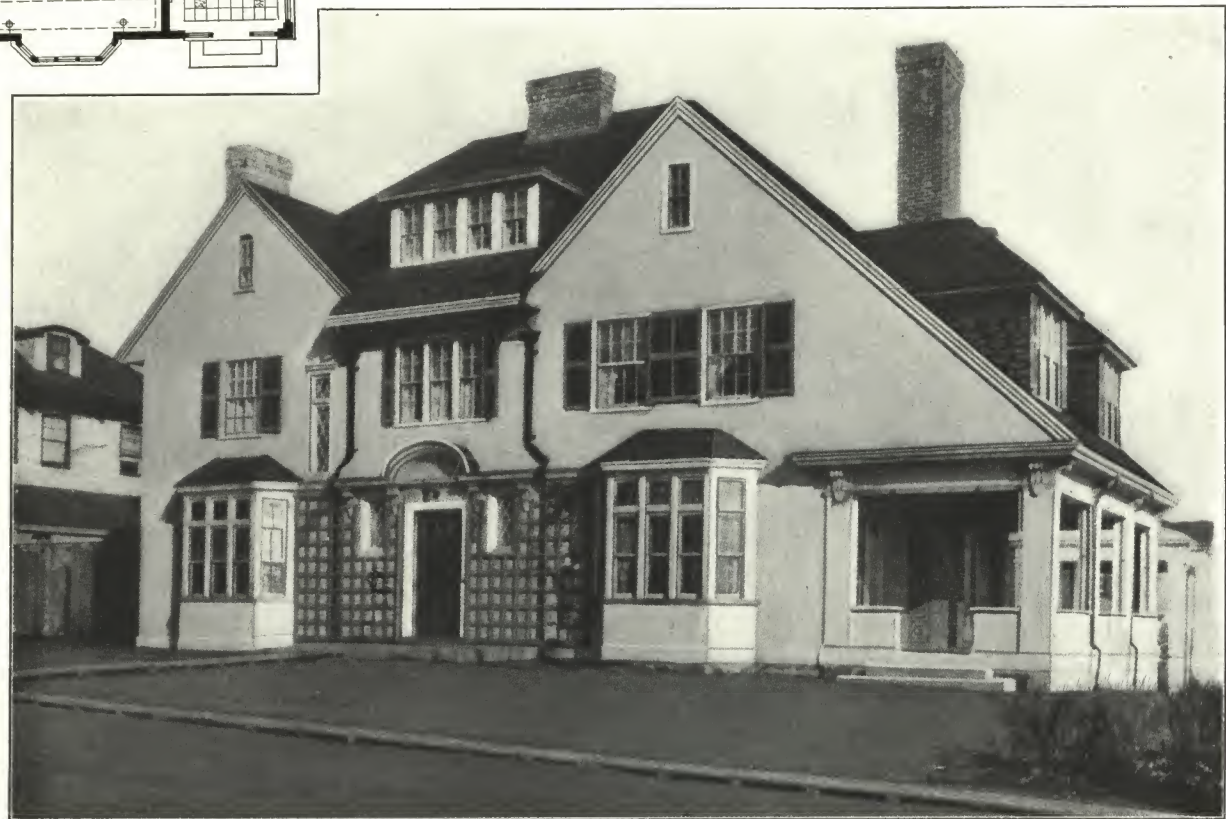
The drawings of the garage were also prepared by the architects already mentioned.





First Floor Plan.—Scale,  $\frac{1}{16}$  Inch to the Foot.

ASSOCIATE ARCHITECTS:  
GEORGE H. HIGGINS AND FRANKLIN H. HUTCHINS,  
NEW YORK CITY.



A Photographic View of the Cement Coated Residence of Mr. Walter M. Libby at Lynn, Mass.



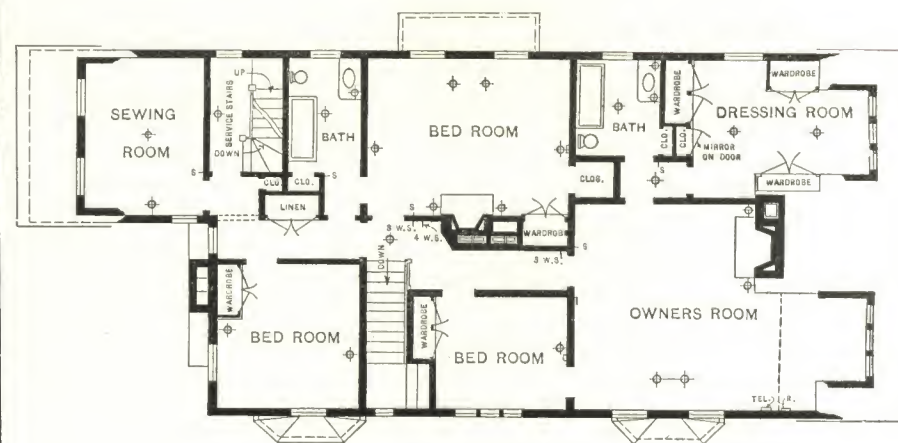


View in Hall Looking Toward the Main Stairs with Reception Room Beyond.



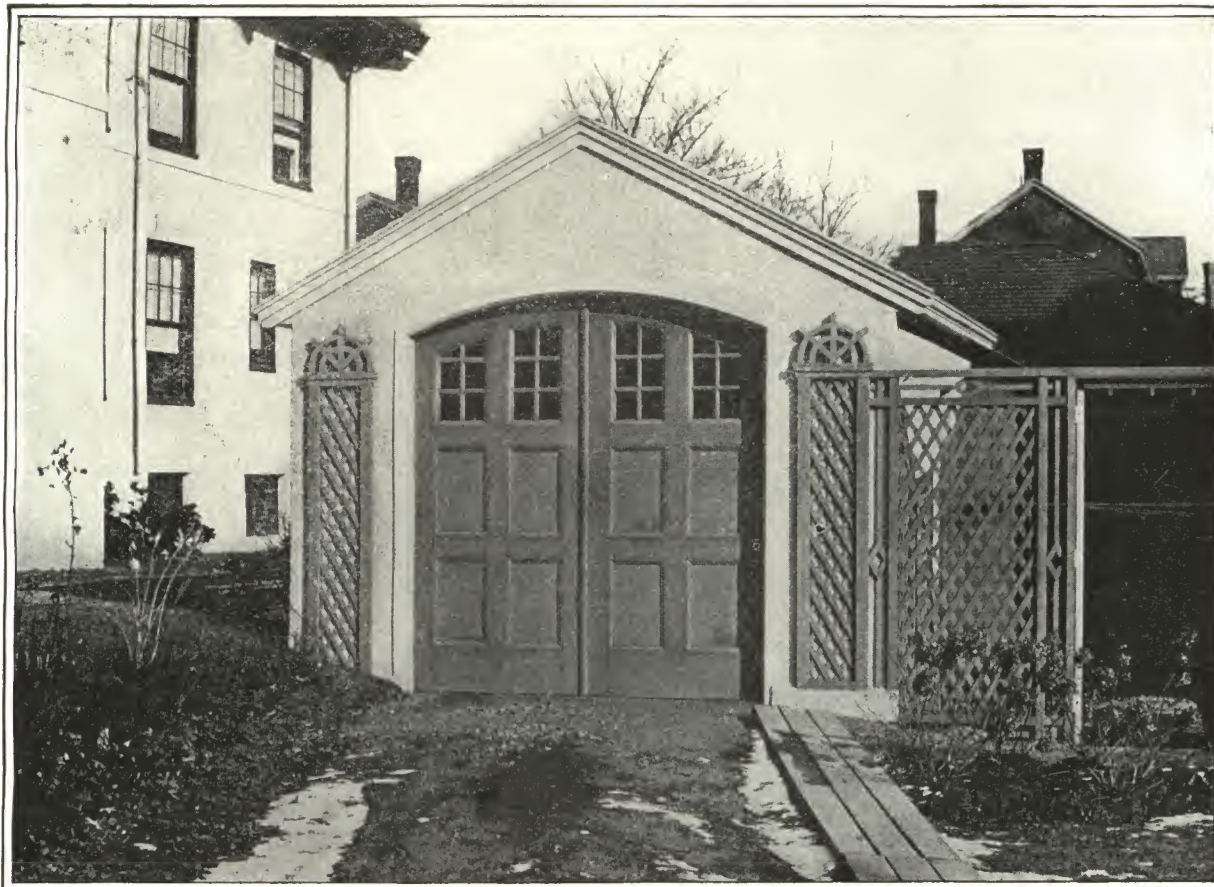
The Living Room as Viewed from a Point near the Front Bay Window.

The Sleeping Room of the Master of the House, Looking Toward the Fireplace and the Triple Dormer.



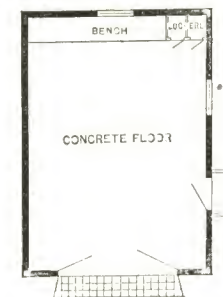
Second Floor Plan.—Scale,  $\frac{1}{16}$  Inch to the Foot.



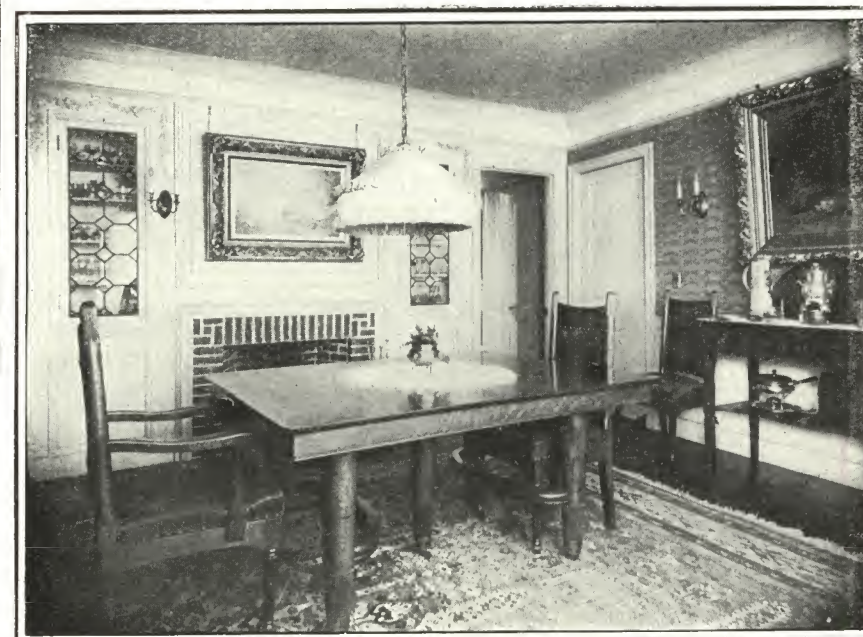


The Cement Garage of Mr. Walter M. Libby at Lynn, Mass.—George H. Higgins and Franklin H. Hutchins, Associate Architects, New York City.

## DESIGN No. 22



Floor Plan of Garage.



The Dining Room Looking Toward the China Cupboards, the Two Doors at the Right in the Rear Leading to the Kitchen and the Main Hall.





## DESIGN No. 23

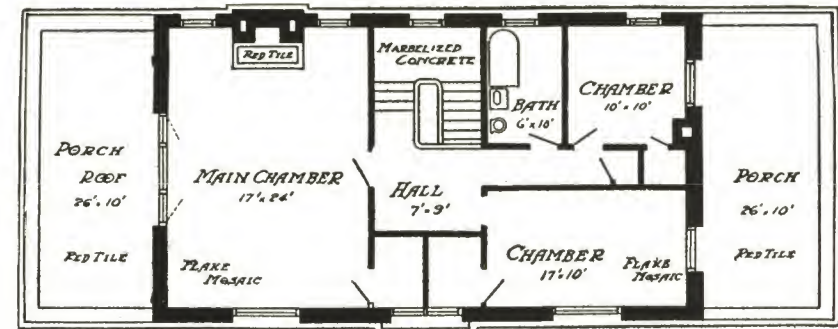
WE present for consideration in this design a house owned by Miss Lillian M. Williamson, of Walden, a pretty suburb south of Chicago, with plans and specifications drawn by Architect Francis J. Barton, of Chicago. Cement is used throughout the building wherever possible, the idea being to make it a perfect example of cement residence construction at a moderate cost. The walls and partitions are of hollow cement tile, while the exterior of the walls is finished with a rough-cast cement plaster coat. The foundations are of solid plain concrete and the floors and stairways of reinforced concrete. Red cement tile is used for the roof, which is surmounted by two concrete chimneys with round tops.

In general outline the house is rectangular in shape, and has a screened porch at each end and a small entrance portico in the center. About the only exterior decoration is a simple molding at the second floor level and a molded cornice relieving the plain concrete wall.

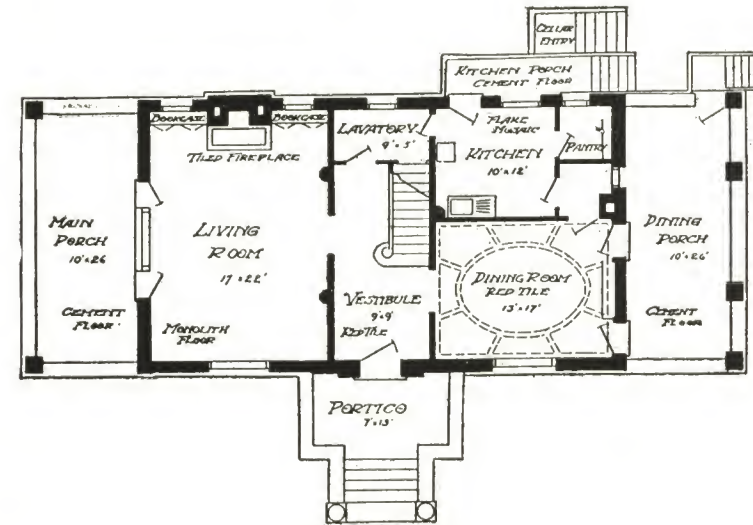
The house has two fireplaces, with window seats on either side and a square of red tile in front of each. The fireplace and mantel are of solid reinforced concrete with molded decorations. The floors are surfaced with a special composition of varying colors in the different rooms and the base boards of the same material as the floor are carried up as a border. The book-cases and china closet are built-in and have leaded glass doors. The dining room is unusual, having a beamed ceiling with an oval central panel from which the beams radiate, carrying out the idea of decoration by means of actual structural details.

The modern idea of living nine months of the year outside of a house rather than inside has been provided for in this design by two spacious porches, one opening off the dining room and the other off the living room. They are entirely separate from the entrance portico, giving the full privacy of an interior room, with the advantage of screened exposure on three sides.

The house is typically modern and it has been the aim of the designer to make every line harmonize with its material. In the open doorways the flat arch is used and where beams and columns are needed for support they are plainly exposed. The floor plans presented herewith indicate the general arrangement of the rooms.



Second-Floor Plan.



First-Floor Plan.

ARCHITECT,  
F. J. BARTON,  
CHICAGO, ILL.

# REPAIRING OLD HOUSES WITH CEMENT

THE cement plastered house seems the best that can be offered in solution of the problem which at the present day confronts the average house owner and home builder of limited means. The only real lumber suitable for clapboards or, as it is termed in some sections of the country "siding," was yellow poplar and white pine. To be absolutely accurate, however, perhaps the only good siding was poplar, with pine as a fairly good substitute.

Excepting the poplar siding of old, there is no thin stuff that will repay the time and expense of putting on and painting. Yellow pine will not hold paint, and decays rapidly; clear white pine is very expensive, while second grade develops cracks, wind shakes, &c., soon after being put on.

When an old house, homelike and comfortable in every way has been neglected, when it should have been painted, and the siding is so weather beaten that it cannot be painted to look well, something has to be done, and to lath and plaster it, seems the best way out of the difficulty. The merits of Portland cement as a substitute for each and every piece of woodwork that has to stand exposed to the weather, not even excepting the shingles, are unquestionable. Of the merits of metal lath over old wood, there are some doubts, but as an experiment the following methods could be tried on an out-building, and if satisfactory, they could be applied later to the main structure.

If the frames are in good condition, get a lot of strips cut at the mill 1 x 2 in. and break these around the window frames about 1 in. back from the inside edge and saw into the sills just outside of the strips, chipping this part away so it will not project into and mar the effect of the new plaster. This strip should be nailed so it may easily be removed.

Now nail on furring strips one over each stud, and lath the exterior walls, cutting all the lath full  $\frac{3}{8}$  in. short, so the new cement may form a smooth jamb clear back to the old casing. A good idea of the construction suggested may be gained from an inspection of Fig. 1, which represents a horizontal section through a window frame and portion of wall.

In applying the plaster be sure that none of the first coat gets into the space between the removable jamb strip and the ends of the lath, or if it does take a suitable tool and dig it all away, so the cement coat may get clear around the ends of the lath, and form the jamb. One hundred yards of outside

cement plaster will require  $1\frac{1}{4}$  bbl. of lime, 20 bags (5 bbl.) Portland cement,  $1\frac{1}{2}$  yd. sharp sand,  $1\frac{1}{2}$  bushels cow hair and 1400 lath.

Run off the lime putty in the usual manner, working in the hair, but using about 1-3 more than for ordinary plaster.

For the first coat take equal parts of lime, putty, and cement, and use this mixture just as one would use lime alone for inside work, mixing the sand into it so as to form a suitable fiber coat. It is imperative that sufficient lime be used in the fiber coat to retard the set of the cement and make the coat flow easily over the lath and into the clinches. It is also necessary to wet the lath very thoroughly ahead of the first coat to avoid lath cracks.

As soon as the first coat is hard enough to stand it, follow immediately with a coat of pure cement and sand in the proportion of two and one-half of sharp sand to one of cement. See that the plaster is fully 1 in. thick, for usually the difference between good and bad work is only a question of whether or not sufficient material was used to every 100 yards. It will not break or scale off if it is thick enough.

As soon as the second coat has hardened sufficiently so it will not run when water is thrown upon it, apply the throw coat. This is done with a broom and paddle or a trowel according to the finish desired. The throw coat for ordinary rough cast work is usually made of equal parts of Portland cement and sand, to which is added just enough lime putty to give it a creamy appearance.

The tools for applying it are an open ended box set at an angle, as shown in Fig. 2, and a paddle with a little ledger strip across the blade, as shown in Fig. 3. Plasterers use them all the way from 2 in. wide up to 8 in., so it seems to be a matter of choice, like paint brushes, governed by the size of the surface to be coated. The mortar is thrown with a quick motion square against the surface being coated, the paddle just barely missing the work. It is entirely a trick of the hand to throw the coat so it will have a uniform appearance and this is acquired only by practice. Very few people can throw it evenly to begin with, but any one ought to learn the trick in an hour's practice.

In scaffolding for outside plaster it is important to have the scaffolding



as free from the walls of the building as possible. In connection with one piece of work there was a walk extending to the adjoining dwelling exactly where the scaffold would naturally stand, and to avoid obstructing this walk ladder scaffolds were built on the plan of some used on a much smaller scale for work in a factory, where benches extended all along the walls. As they proved safe and very convenient as well as portable, it was decided to use them in the present case. They seemed so thoroughly satisfactory in every way that

they are well worth illustrating, and in Fig. 4 is shown the general idea as it was carried out.

An old house with that unsightly monstrosity so common in some parts of the Western States—a rafter finish cornice—can be very easily remedied. In Fig. 5 a suggestion is shown, and the additional width to the cornice of the new galvanized iron trough or gutter, will usually be found quite an improvement in the looks of the building.

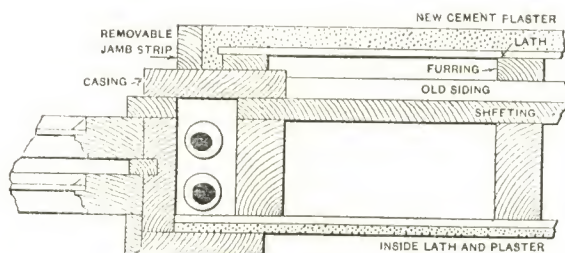
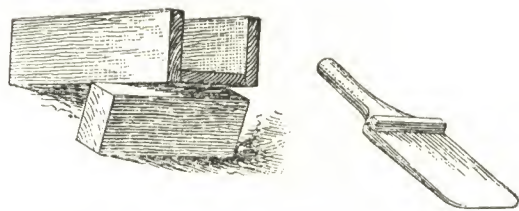


Fig. 1.—Horizontal Section Through Window Frame and Wall.



Figs. 2 and 3.—Open Ended Box and Paddle for Applying "Throw-coat."

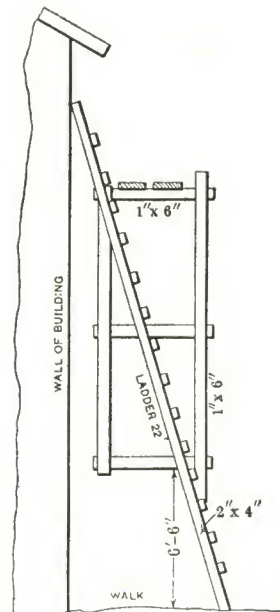


Fig. 4.—Scaffolding for Outside Plaster Work.

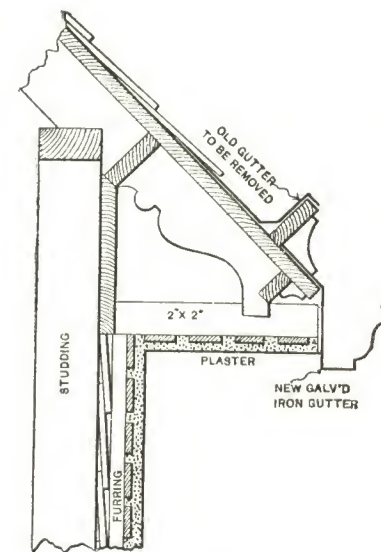


Fig. 5.—A Rafter Finish Cornice.

## DESIGN No. 24

\$500

A good example of a garage of timber frame construction, to which is applied an exterior coat of cement-mortar attached to metal lath, is the one which is here illustrated. The half-tone engraving affords an excellent idea of the appearance of the finished structure, while the floor plan and the vertical section through the main wall show the interior arrangement and general construction. As intimated above, the main walls are of frame, the studs being 2 x 3 in. placed 20 in. on centers, and carry a covering of sheathing boards, over which are placed  $\frac{7}{8}$  in. furring strips set 8 in. on centers. To these furring strips, metal lath is attached and the cement plaster applied directly thereto, the finish being what is known as "rough cast." This arrangement gives a dead air space between the exterior cement coating and the sheathing boards.

The wall plates and rafters are 2 x 6 in., while the floor of the garage consists of 3 in. of Portland cement laid on a foundation of chip stone 6 in. in depth. The cement concrete used was made in the proportions of one of cement to three of sand and five of  $\frac{3}{4}$  in. crushed stone well tamped down and

having a top surface  $\frac{1}{2}$  in. thick, consisting of one part cement and two parts sand. When thoroughly dry two coats of floor paint were applied.

The interior is finished in North Carolina pine and varnished. A safer plan would undoubtedly have been to use plaster board or plaster applied to wire lath. The cupola has a swinging damper within, controlled at the floor by means of a cord, thus allowing all ventilation control when needed.

The garage is 20 ft. square, and at the rear is a Bowser gasoline tank. At the side is a dry well to which leads the waste pipe from the drain or strainer of the wash stand, all as shown on the plan. The lighting of the building is by electricity.

This neat and attractive garage was built for T. B. Monroe, at 1945 Commonwealth avenue, Brighton, Mass., in accordance with drawings prepared by Architect W. H. Andrews, 407 Paddock building, 101 Tremont street, Boston, Mass. The cost, including the underground gas tank, was about \$500.

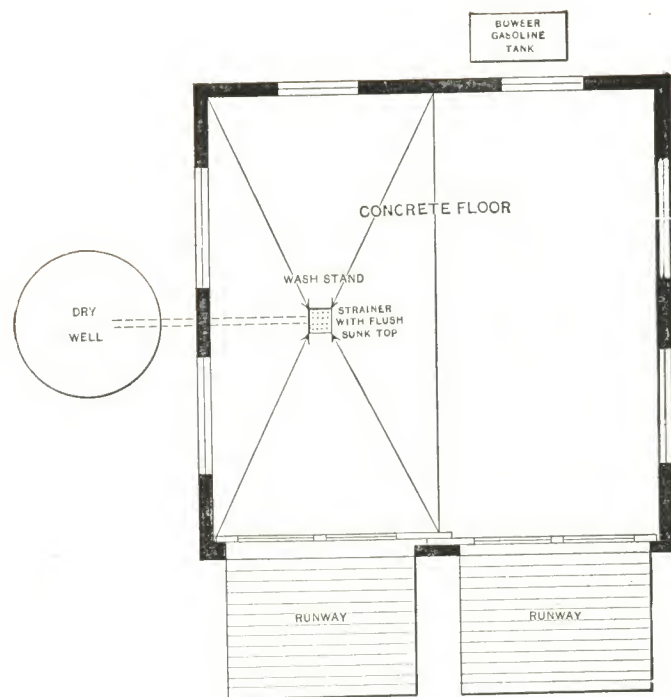


DESIGN No. 24



A Cement-coated Garage of Frame Construction Built for Mr. T. B. Monroe, Brighton, Mass.

ARCHITECT: W. H. ANDREWS, 101 TREMONT STREET, BOSTON, MASS.

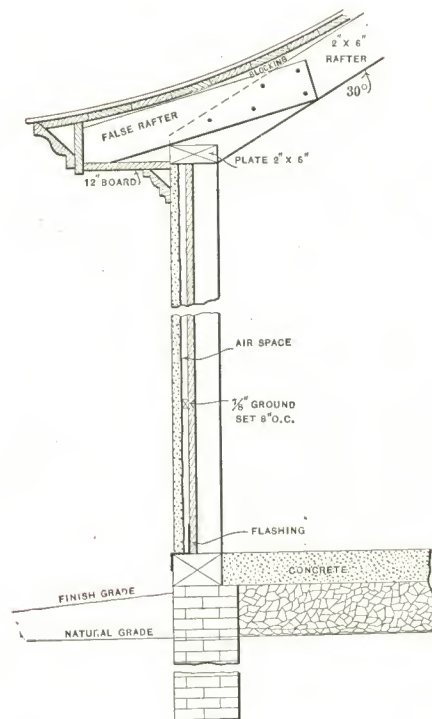


Plan of Garage.—Scale,  $\frac{1}{8}$  Inch to the Foot.

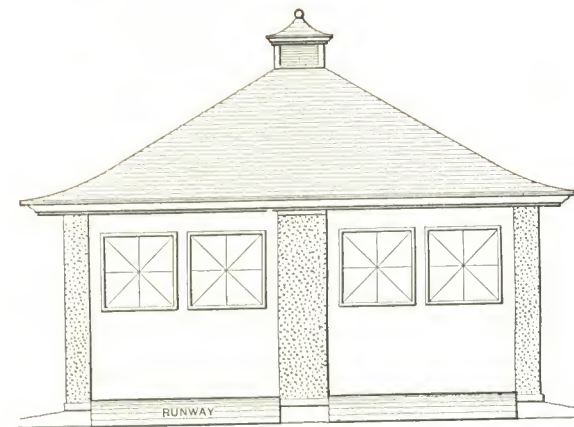
20 Feet Wide.

ARCHITECT:  
W. H. ANDREWS,  
BOSTON, MASS

## DESIGN No. 24



Cross-section, Showing Details of Cornice and Foundation.—Scale,  $\frac{1}{8}$  Inch to the Foot.



Front Elevation.—Scale,  $\frac{1}{8}$  Inch to the Foot.



## DESIGN No. 25

**\$1200**

A NEAT and effective design of garage well adapted to meet the requirements of the suburbanite as well as those residing in the smaller cities and towns of the country is illustrated herewith. The treatment of the exterior is such as to give broken roof lines and relieve the severe monotony of a square structure with a simple hipped roof. The construction is substantial, the foundation walls being of stone, but if one should prefer to use concrete the mixture would consist of one part cement, three parts sand and six parts broken stone. The floor is a 5 in. concrete slab composed of one part cement, two parts sand and four parts crushed stone reinforced with  $1\frac{1}{2}$  in. round rods, placed 6 in. on centers.

There are two concrete beams extending across from foundation wall to foundation wall and resting upon  $12 \times 12$  in. brick piers. These beams are each reinforced by three  $\frac{3}{4}$  in. rods. The basement is 8 ft. 6 in. in the clear while the main floor of the garage has a ceiling height of 10 ft.

Embedded in the concrete underpinning is a  $4 \times 8$  in. sill which forms the base to which to secure the bottom of the outside framework. Upon this sill

rests the  $2 \times 4$  in. studs placed 16 in. on centers, and these are covered with  $\frac{7}{8}$  in. sheathing boards. Over these is placed a layer of building paper and then  $\frac{7}{8} \times 1\frac{1}{2}$  in. furring strips are nailed on vertically. To the furring strips is attached wire mesh lathing for the purpose of carrying the exterior cement plaster. This material is put on in three coats and is composed of equal parts best Portland cement and sand.

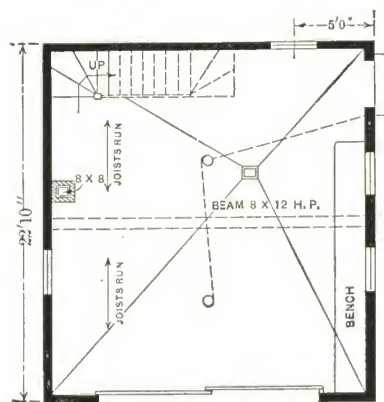
The inside of the garage is finished with  $\frac{7}{8}$  in. sheathing fastened directly to the studs. The ceiling beam consists of an  $8 \times 12$  in. hard pine timber.

The floor plan shows the position of the work bench, the run of the joists, the position of the chimney and the location of the stairs leading to the attic. The elevations and details afford a good idea of the style and finish of the building.

The garage illustrated is that of C. S. Chapin at 935 Beacon street, Newton Center, Mass., and the drawings were prepared by Architects Kendall, Taylor & Co., 93 Federal street, Boston, Mass.



Front Elevation of Garage.



Plan of Main Floor.

Scale,  $\frac{1}{16}$  Inch to the Foot.  
26 Feet Wide.

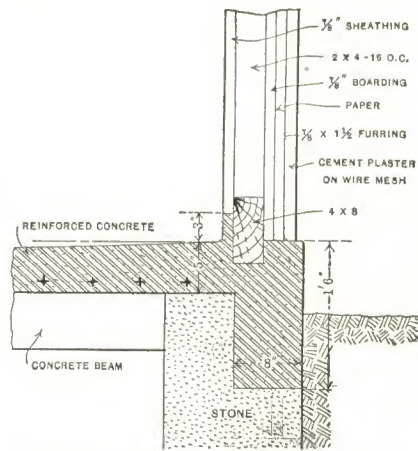


Photographic View of the Private Garage of Mr. C. S. Chapin at Newton Center, Mass.

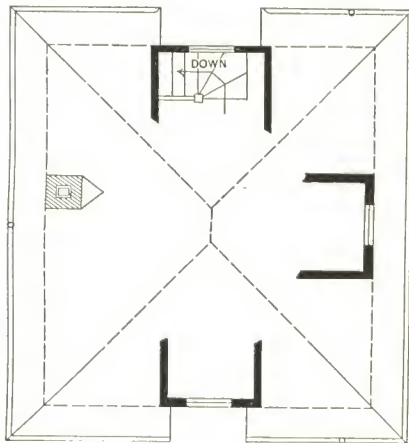
ARCHITECTS:  
KENDALL TAYLOR & Co.,  
93 FEDERAL ST.,  
BOSTON, MASS.

DESIGN No. 25

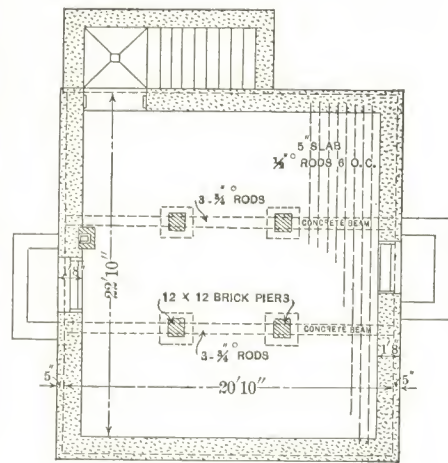




Details of Floor and Wall Construction.  
Scale,  $\frac{1}{2}$  Inch to the foot.



Attic Plan with Outline of Roof.



Plan of Basement.

Scale,  $\frac{1}{16}$  Inch to the Foot.

## DESIGN No. 25



Side (Right) Elevation of Garage with Dotted Lines Indicating Basement.

*Elevation, Section, Plans and Detail of a Cement-coated Garage of Frame Construction.*





## DESIGN No. 26

**\$1350**

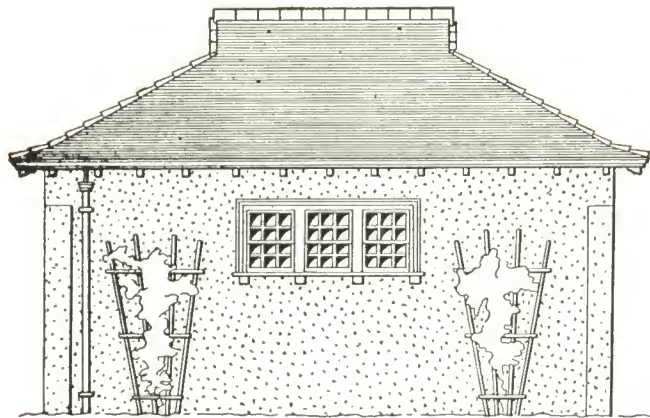
WE illustrate herewith an example of private garage in the construction of which the walls are of hollow tile covered with cement plaster, while the roof is of red tile with hips and ridge to correspond. The manner of securing the roof framing to the concrete walls is clearly indicated in the detail which is shown directly at the right of the front elevation.

The interior of the building is open to the roof, the construction beams being left exposed and the spaces between being plastered. The walls are given a rough, hard plaster finish, while the floor is of concrete with a 9-in. base.

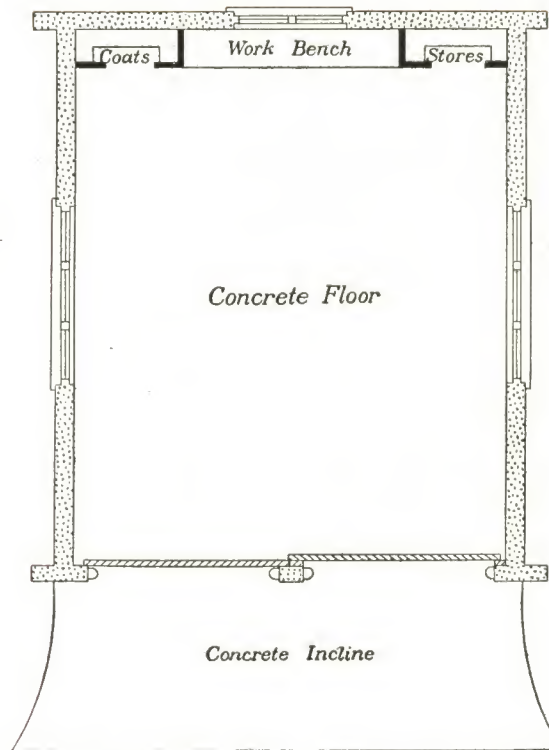
The building has two sliding entrance doors, the approach being of concrete and slightly inclined. The capacity of the building is sufficient for two cars at least, with room for more by slightly crowding. At the rear of

the garage is a work bench extending fully half way across the end and lighted by a broad window, while at the right and left are closets or cupboards, one being intended for stores and the other for coats and automobile apparel. Ample light is afforded the main floor by the triple windows on either side, these being as high in the walls as experience has found best adapted for the purpose required.

The garage here illustrated is that of Mr. S. J. Francis at Newton Center, Mass., and was erected by Benjamin Adey, of Newton Center, at a cost of \$1,350, in accordance with drawings prepared by A. G. Richardson, architect, No. 9 Cornhill, Boston.



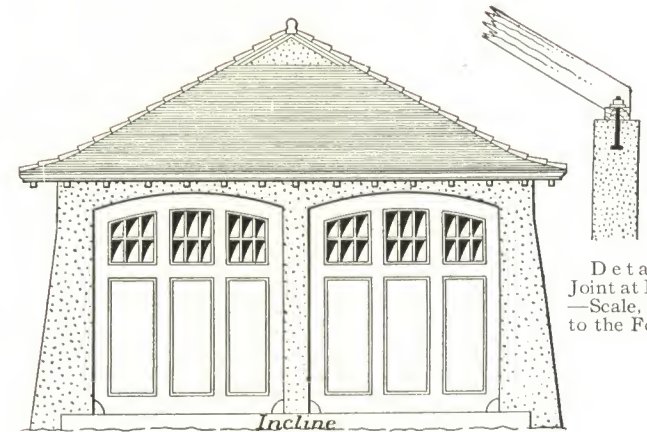
Side (Right) Elevation.—Scale,  $\frac{1}{8}$  Inch to the Foot.



Floor Plan.—Scale,  $\frac{1}{8}$  Inch to the Foot.

25 $\frac{1}{2}$  Feet wide

## DESIGN No. 26



Front Elevation.—Scale,  $\frac{1}{8}$  Inch to the Foot.

Detail of  
Joint at Eaves.  
—Scale,  $\frac{1}{8}$  Inch  
to the Foot.



DESIGN No. 26



Direct Reproduction from a Photograph of the Garage of Mr. S. J. Francis, at Newton Center, Mass.

ARCHITECT:  
A. G. RICHARDSON,  
BOSTON, MASS.





## DESIGN No. 27

\$1500

ONE of the prime requisites in connection with garage construction, whether it be for public service or to meet the requirements of the private individual, is to render the building as nearly fireproof as possible. This may be accomplished by constructing the walls of solid concrete, or they may be of hollow terra cotta tile with an exterior of cement plaster. An interesting example of the latter form of construction is the garage which is shown herewith.

This has the walls built of terra cotta blocks and cement plastered, while the roof is covered with the green glazed tile supplied by Ludowici-Celadon Company, Chamber of Commerce Building, Chicago, Ill. The floor is of cement, and in the center toward the right side is the pit for gaining ready access to the under body of the motor cars.

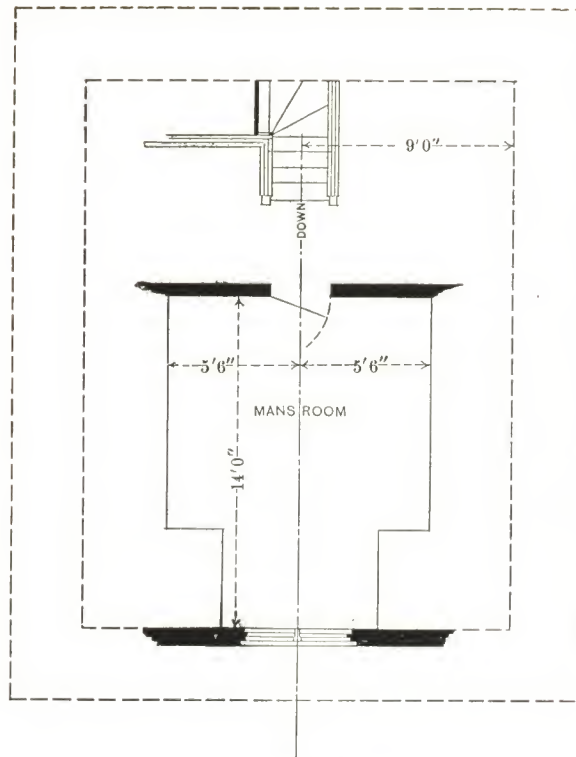
The pit shown on the main floor is 3 x 6 ft. in size and is placed 4 ft. from the side wall, while the end of the pit is 9 ft. from the rear wall.

At the rear is the flight of stairs which lead up to the second floor, or rather attic, which is devoted to the man's room. This is lighted by a large window at the front, which partakes in a measure of the dormer type.

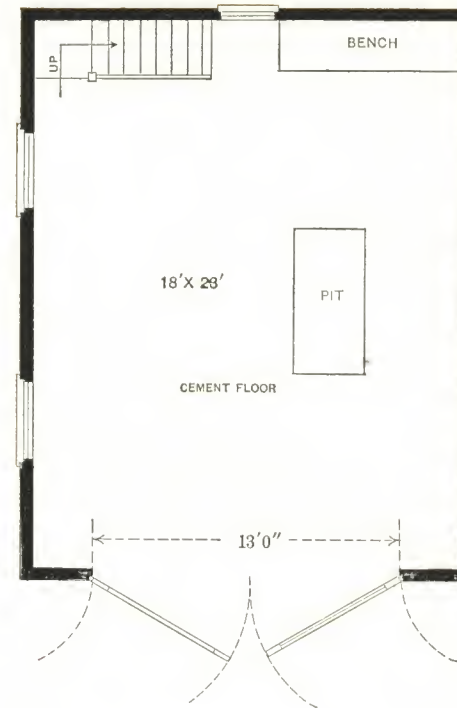
The main floor measures 18 x 23 ft. in area, and is amply lighted by two windows at each side and one in the rear, the latter also serving to light the work-bench in the rear right-hand corner of the building. The elevations and floor plans, taken in connection with the half-tone picture, afford a good idea of the general construction that has been followed.

A close comparison of the detail drawings with the photographic view of the complete building will show that a few slight changes were made from the original plans during the progress of the work. This is to be found for the most part in the double entrance doors, the front elevation and plan showing them to swing outward, while the photograph shows them to slide one behind the other. Little changes of this kind are of frequent occurrence, but we make mention of them in this particular case so as to enable the reader to reconcile the plans and elevations with the picture of the finished building.

The garage is that of Frank H. Stewart at Newton Center, Mass., and was designed by Herbert Lucas, architect, 129 East Nineteenth street, New York City. The builder was Benjamin Adey, of Newton Center, Mass.



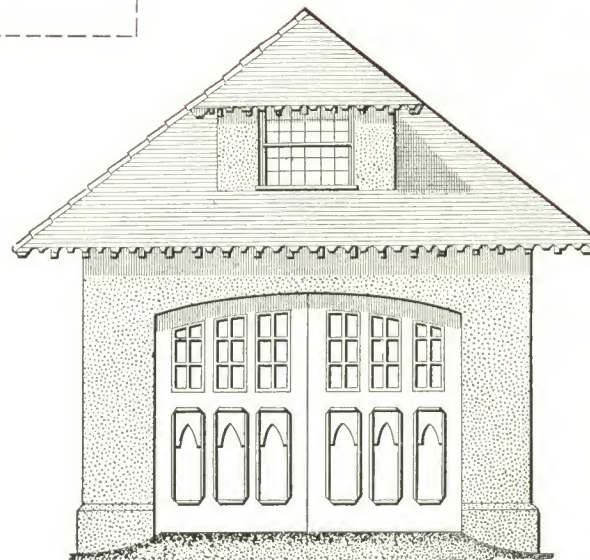
Attic and Roof Plans.



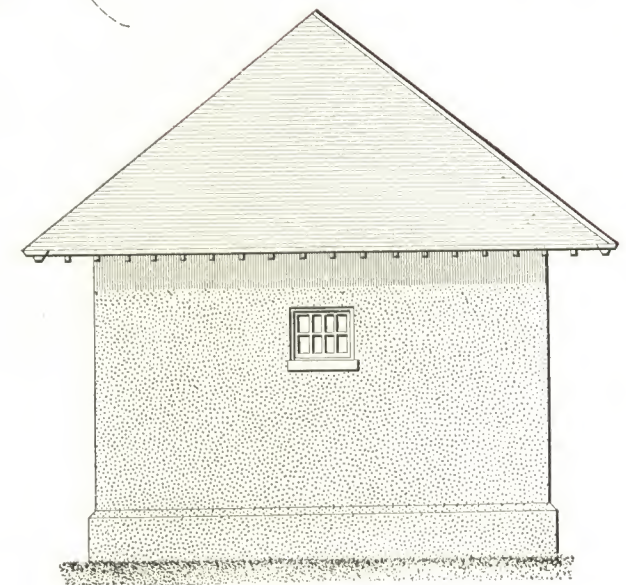
19 Feet Wide.

DESIGN No. 27

Plans and Elevations—Scale,  $\frac{1}{4}$  Inch to the Foot.



Front Elevation of Garage.



Rear Elevation.



DESIGN No. 27



A Photographic View of the Building with its Roof Covered with Green Glazed Tile.

ARCHITECT:  
HERBERT LUCAS,  
NEW YORK CITY.





## DESIGN No. 28

\$1500—2500

ABSOLUTELY fireproof garages are important necessities, and their construction out of high fire resisting material without sacrificing any of the dignity of architectural effects requires considerable study of local conditions. Strict rules of construction have been formulated by the insurance companies to limit the fire hazard in other buildings, and the modern garage, with its potential possibilities for fire, should receive its full share of attention.

A completely fireproof garage is not only possible of construction, but the problem offers few difficult features which the ordinary architect cannot meet. The first essential is to eliminate wood or combustible matter entirely from the building. The selection of the proper building material and its use in walls, roof and partitions must then determine the relative success of the undertaking.

The peculiar adaptability of hollow terra cotta blocks for this work must be apparent. Their high fire resisting qualities, durability, great strength and lightness make them ideal units for building a private garage. They lend themselves so readily to this form of building that they can be utilized harmoniously with iron beams, slate or metal roof and brick veneer or stucco work. The garage can be constructed along simple, artistic lines so that every part of it is absolutely fireproof, and an interior fire started from leaking gasoline could do no more than burn up the fuel and such interior furnishings as might come in contact with it.

A private garage built of hollow terra cotta blocks should have the foundations laid on concrete footings, with the 8 x 16 in. blocks placed lengthwise with the walls. Each course should be laid up in Portland cement mortar composed of 5 parts of lime mortar to 1 part of the cement, lime to be freshly burned and sand clean and sharp. On the top of the fourth course of the foundation the walls begin with the 8 x 8 blocks, with the interior openings

running vertical. The webs of the foundation blocks are from  $\frac{1}{2}$  to  $\frac{3}{4}$  in. thick, giving an ultimate strength of 2500 lbs. per square inch and a total carrying load of 80,000 lbs.

The artistic effect of the walls is enhanced by using rock-faced blocks for the water table, quoins and band course above the first story. The window sills and lintels are formed of tool-faced blocks, which add sufficient contrast to the plain walls to insure a pleasing result.

The floor of the garage should be composed of concrete, 3 parts cinders and 1 of Portland cement, with a finishing coat of cement and fine sand, making the total thickness 4 in. The concrete flooring is brought up flush to the edges of the wall blocks, and a slight curve given to it to avoid sharp corners for dirt and dust to lodge in. The flushing of the garage floor with water for cleaning purposes will be greatly facilitated in this way. The collection of grease and oil in the corners of the average garage accounts for a good deal of the disagreeable odors.

The construction of the second story floor in a thoroughly fireproof manner requires the use of a small amount of structural iron. Wooden beams can be used for such a floor support, and terra cotta blocks can be attached to the under side to protect them from fire, but to make the garage absolutely fireproof only metal, terra cotta and concrete should be employed. This suggests the long span terra cotta arch. The principle of this form of flooring is based on transverse steel wires running straight from bearing to bearing, with small wires interwoven with them at short intervals. The line of natural tension is in the line of the bearing strain, and the floor does not deflect under any safe load indicated.

Over and through these wires cement is placed for uniting and supporting the tile blocks. When the cement hardens, a complete monolithic floor

of cement and hollow blocks is formed, which is not only absolutely fireproof, but exceptionally strong and rigid. In tests made with this type of floor a weight of 733 lbs., live load, to each superficial foot was distributed, so that a total load of 187,680 lbs. was carried on the floor with a clear span of 16 ft. between girders.

For a private garage, a much lighter floor would be required unless the upper story was to be employed as a storage room for automobiles, with a lift connecting the two floors. This is sometimes desirable on a country estate where a number of machines are kept. The load capacity of the floor would then have to be calculated, so that two or more heavy touring cars could be stored safely upstairs.

In spans of 5 to 20 ft. the ultimate strength of the tile floor is carefully calculated, according to the thickness of the tile. With a clear span of 20 ft., 12-in. tile would give an ultimate strength of 572 lbs. per square foot, and with 6-in. tile, 142 lbs. For ordinary garage purposes, the 6-in. tile would thus answer all purposes on a 20-ft. span. With a span of 10 ft., the strength of the floor with smaller tiles is greatly increased. With only a 10-ft. span, tiles 4 in. thick would give a carrying capacity of 335 lbs. to the square foot, and with 3-in. tile, a strength of 220 lbs.

Where a 1-in. or 2-in. floor surface of Portland cement is used over the tile blocks, the strength of the span is further increased. Where the steel rods and wires are supported only on two sides, a 10-ft. span, with 3-in. tile, will have an ultimate strength of 560 lbs. per square foot with 1-in. Portland cement floor surface, and 1140 lbs. with a 2-in. surface. When the supports of the wires are on four sides the floor will carry a much greater load than mentioned above.

This system of floor construction dispenses with steel beams, and stretches from girder to girder or wall to wall. Light steel girders riveted at each corner and fitted in the wall of hollow blocks carry the large steel wires and the smaller transverse wires interwoven with them. Where it is desirable to reduce a 20-ft. span to half that width, a center I-beam runs across the middle of the floor through which the steel wires pass on their way from girder to girder.

The 16-in. I-beams and girders can be used for this purpose. If shallow girders and beams are used, the blocks may be set only 1 in. below the level of the floor. The wire truss reinforcement used in this system is shipped

to the building in reels, and can be cut to proper lengths as the job requires. Special hollow blocks are made in sections to fit around the ends and corners of the girders and beams, so that every part of the metal work is incased in fireproof material.

The cost of this system of hollow block floors averages 30 cents per square foot, put in the building, but conditions of labor and cost of cement may modify this to some extent. When the remarkable strength and durability of such a floor are considered in connection with its fireproof nature, the cost is not so great as to deter one from adopting it where the garage, placed near the house or barns, would form a constant menace to property.

Roof beams and rafters of light structural steel to carry tile, metal or slate shingles should cost upward of \$100 more than if wood was employed, but in the end the former would prove the cheaper. The industry of rolling light steel beams, girders and rafters for this type of fireproof structure is in its infancy, but the demand for them is so steadily increasing that the cost must eventually come down. The steel beams are laid directly on the top course of special joist blocks, which are cut away at the end to permit a snug fit. The blocks surround every part of the metal and completely protect it from any exposure to fire.

The roof rafters rise from the beams at the desired angle and are secured at the peak in the ordinary way. The hollow terra cotta blocks are fitted between these rafters, with light tension rods to hold them in position. Where slate or roofing tiles are to be nailed on the outside, full porous terra cotta roof blocks should be used. Nails can be driven in the porous blocks without breaking them, and they hold nearly as firmly as if driven in concrete before it has firmly set. Roofing tile or corrugated iron or metal shingles can be used for the exterior finish just as desired. The pitch of the roof and its exterior finish in any one of the non-combustible materials are questions which local conditions must determine. The chief aim is to secure a harmonious ensemble without reducing the fireproof qualities of the structure.

For this reason the stairway leading from the first floor should be of metal. A straight or spiral stairway exposed on all sides reduces the fire hazard, and is essential for the ordinary garage, even when a lift is provided for handling the automobiles. The design for the living quarters of the chauffeur on the second floor can be readily changed to make storage accommodations for the machines. In this case no partitions are required, nor



## DESIGN No. 28—Continued

finishing of walls and ceilings. The exposed surface of the bonded terra cotta blocks will not be an unpleasant effect.

The same is true of the main floor. The neutral tints of the blocks, with very light joints of cement mortar, form a practical interior wall and ceiling, which is better than a rough finish in plaster. If plaster is desired no furring is necessary, as blocks should be used to which plaster can be directly applied. The only partitions required for this floor are those dividing the tool closet and the dressing or storage room from the rest of the place. Very light partitions are needed for this purpose. Three-inch partition blocks can be used safely up to a height of 12 ft., but above this 4-in. blocks are employed. Two-inch partition blocks are sometimes used, but they require reinforcement of metal. Semi-porous and full-porous blocks are employed for partition purposes, and every alternate course should be made full-porous. This will permit the nailing or screwing of anything in the walls for holding tools or clothes. The partition blocks come in standard sizes of 12 x 12 and 8 x 12, but special sizes are made for the trade at only slight extra expense.

As a further precaution against fire, the gasoline tank should be inclosed in a terra cotta closet by itself. This would permit of no leak or danger from fire from the outside. With a properly protected gasoline tank, smoking in the garage could be indulged in without extra hazard. The electrically lighted repair pit should be depressed at least 2 ft. below the floor level and lined throughout with concrete. Repairs to the under part of the automobiles could be easily made in the private garage by the chauffeur with such a pit provided, and considerable delay and expense would thus be saved.

Doors and windows of the garage, to carry out the absolutely fireproof idea, should be made of metal or at least of wood covered with metal. The total elimination of wood is one of the important considerations of the whole question. Half the value of a fireproof building is nullified if the interior trim is finished in wood or with wooden joists, beams and rafters. The difference in the insurance rates on the buildings is an item which should also be taken into consideration.

Simple and direct lines have been followed in the building of the garage, and the final cost is affected considerably thereby. The superficial feet of partitions are relatively few, and all unnecessary interior finish is avoided. The cost of a 3-in. partition is about 11 cents per square foot of surface, and of a 4-in. partition slightly less than 12 cents. A 6-in. partition of

full-porous and semi-porous terra cotta hollow blocks can be put up in walls for about 13 cents per square foot. The relative cost of partitions of a fire-proof nature, even for the upper story to provide living rooms for the chauffeur, is so low that it is economy to adopt them.

The outside walls of 8-in. blocks cost about 26 cents per square foot, and with 4-in. furring 30 cents. The foundation blocks 16 in. thick should cost about 45 cents per square foot. The number of square feet of walls, partitions and floors will thus enable the architect to reach an approximate estimate of the total cost of the garage of any given size. An average cost of a garage of this type can be made as low as 16 to 17 cents per cubic foot, including the use of light steel beams, girders and roof rafters. If wooden joists and rafters are substituted the cost is reduced by about \$150. In using wooden beams and rafters the cost of protecting them with 2-in. ceiling blocks secured to the under side by screws and washers is an important labor item. This method of fireproofing wooden beams over boiler rooms of old plants has been employed successfully in many places, and in fireproofing some of the old tenements in New York it has been recommended by the Tenement Commission.

The improvement of the exterior of the garage by either stucco work or brick veneering to harmonize with other structures on the place is merely a matter of slight extra expense. A thin veneer of bricks of any color can be added to the garage at a cost of 30 to 40 cents per square foot, depending upon the cost in thickness of the bricks. With fine pressed bricks at \$29 per 1000 a 4-in. veneer would average 35 cents per square foot. The galvanized bonds, which come with the hollow blocks, when specified, are used at every fourth course, as shown in detail, so that the veneer is firmly anchored to the tile wall. This gives a 12-in. wall of brick and tile of the most substantial nature—fireproof, weatherproof and practically indestructible.

An exterior of rough casting or stucco work for a private garage yields unusually artistic effects, especially on a country estate where the living house is of stucco work. With two coats of stucco, at least  $\frac{7}{8}$  in. thick, composed of 3 parts clean, sharp sand, 1 part Portland cement and 2 per cent. of total weight of hydrated lime, the work should cost not more than 75 cents per yard, and it may be done in some localities as low as 50 cents. The application of the rough casting should be made with reasonable care by experts to secure uniformity of surface and lasting qualities. The exterior of the blocks is

**DESIGN No. 28—Continued**

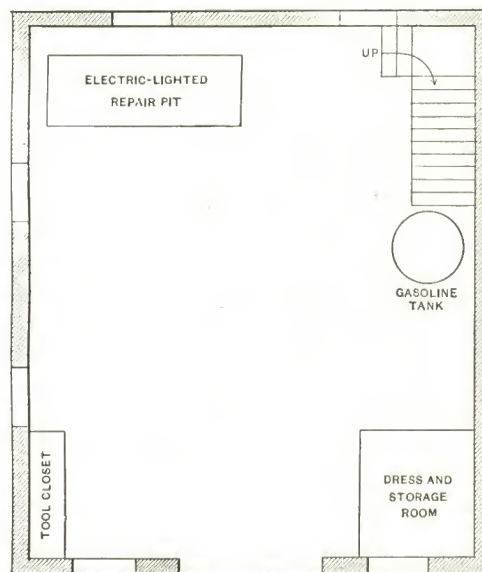
prepared for receiving the plaster without any further work, other than thoroughly soaking with water just previous to application. The mortar must be well set before using, and the workmen must tool it constantly on the walls until hard enough to retain its position.

From these figures it will be seen that an absolutely fireproof private garage of artistic beauty and effect can be constructed with ample space for all purposes at prices ranging from \$1500 to \$2500. The higher cost includes the best stucco exterior or veneer of good pressed bricks, with metal doors

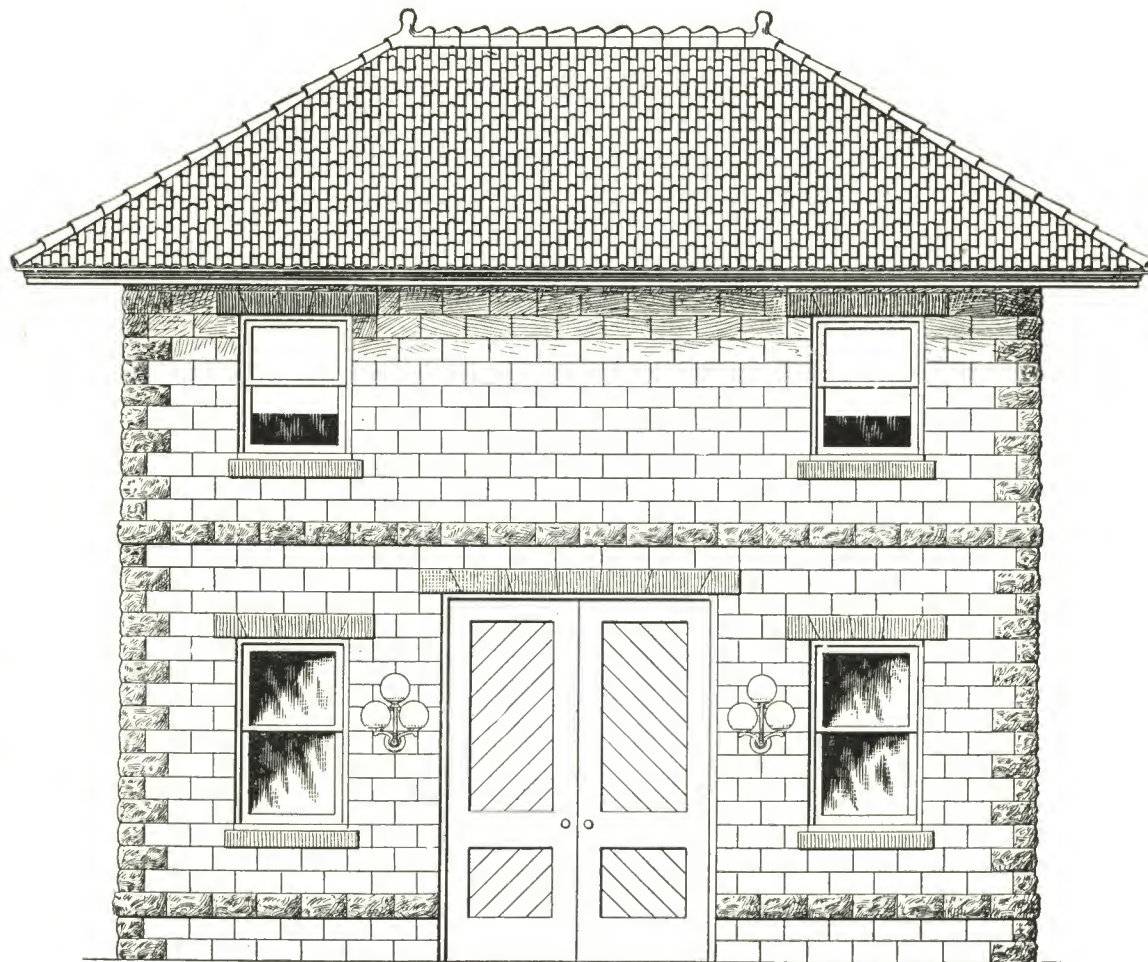
and stairs, fireproof block partitions and floors built according to the long span system. The building should be lighted by electricity to reduce the fire hazard, and drain pipes designed and laid so that any leakage of gasoline will be conducted away from any other building. The application of simple principles of architectural construction with terra cotta building blocks secures the most durable and satisfactory results for either a country or town private garage of this description.



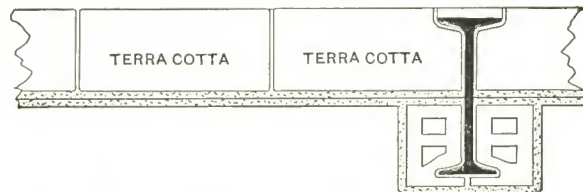
DESIGN No. 28



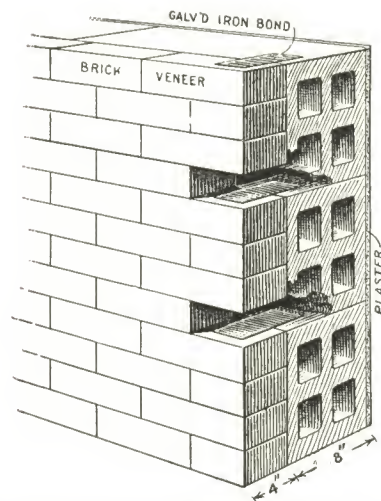
Main Floor.—Scale,  $\frac{1}{16}$  Inch to the Foot.  
40 Feet Wide.



Front Elevation.

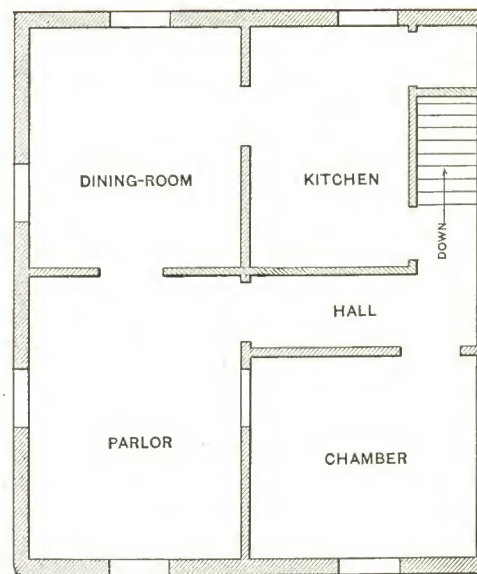


Longitudinal Section of Floor Construction, Showing Steel Wire Running from Bearing to Bearing.



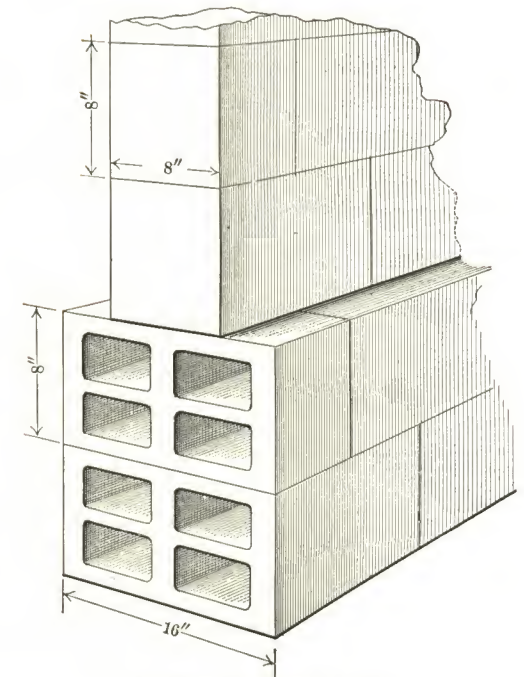
Detail of Brick Veneered Hollow Block Terra Cotta Wall.

## DESIGN No. 28



Second Floor.

Cross-section of Floor Construction.



Detail of Foundation Wall.



# DESIGN No. 29

\$1600

A most interesting example of the growing popularity of cement as adapted to the construction of stables, small dwellings and similar buildings, is illustrated by means of the engravings appearing upon the pages which immediately follow. At the outset it may be stated that it was the purpose to erect a perfectly simple yet substantial structure, giving first consideration to practical and convenient features rather than to artistic results, and the outcome is a building meeting all requirements, yet entirely pleasing from an artistic point of view. It is easy to see how readily the same methods of construction could have been applied to a dwelling with equally satisfactory results.

Economy being an important consideration in all work of this character, it may be stated that in this particular instance, the cost of concrete construction was much less than either frame, brick or stone, while it has the additional merit of never requiring painting, pointing or repairs. As the experts point out, the first cost of concrete is the last cost.

The building is 26 x 37 ft. in plan, with a 14-ft. shed or overhang. The outer walls are 11 ft. 6 in. high, and these with the partition walls are of concrete 6 in. thick and were constructed as a unit. In other words, all walls were carried up at one time with a "form" only two boards high inside and outside—a method of quick construction greatly facilitated by use of the Dietrich clamp instead of bolts. The foundations are 24 in. deep and consist of a 12-in. wall carried to the grade line. The concrete for the foundation walls and columns was 1 part Giant Portland cement, 2½ parts Jersey gravel and 5 parts crushed trap rock ¾ in. and under in size.

The reinforcement consisted of ¾-in. rods set perpendicular every 18 in. and the same size rods horizontally every 2 ft. 6 in.

The ground floor and the floor under the shed are of concrete laid off in 6-in. squares. Planks were laid over the concrete in the several stalls shown on the plan. The roof and second floor are of wood.

The walls were given a float finish to bring them to an even texture as well as to partly eliminate the board marks.

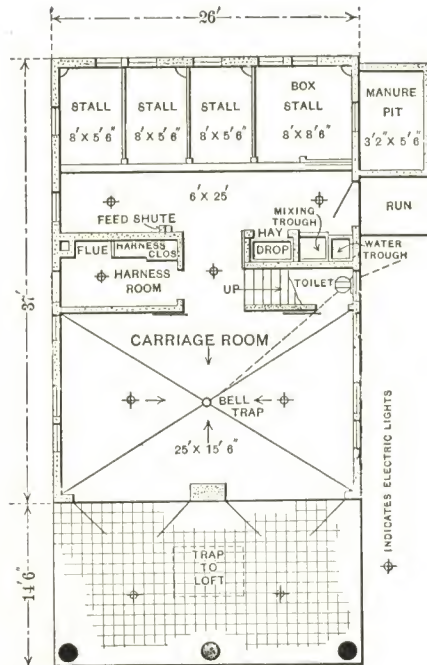
By using two rounds of boards for "forms" only 1000 ft. of lumber were required for "forms," scaffolding, etc., this method showing a saving of at least 70 to 80 per cent. of the lumber ordinarily required for forms. The little lumber used in this instance was afterward utilized in the carpenter work, leaving no waste when the job was finished.

The walls of the building have always been dry and even free from condensation, notwithstanding the fact that a fire is kept going in the harness room in winter. It may be well in this connection to emphasize the fact that concrete as employed in this instance might be utilized to advantage in much larger structures; by which statement is not meant the skyscraper, the factory or the office building, which involves important engineering problems from foundations to roof, but buildings of simple design, which might at the same time cover a large area. For example, this stable might have been many times as long or wide and yet have presented no problem more difficult than was encountered in making it of the dimensions stated. Had it been intended for a dwelling the walls could have been extended in any direction by the same simple process, so as to include all necessary apartments or as many as might be desired.

Referring to the floor plan, it will be seen that a carriage room with wash and drain occupies the front portion of the building. Beyond this at the left is the harness room, while at the right is the flight of stairs leading to the hay loft and underneath a toilet. Beyond the harness room are the hay and feed chutes, as well as the mixing and watering troughs. The hay chute and watering and mixing troughs are of concrete. At the rear of the building is a box stall and three single stalls. On the second floor is the groom's room, the feed box and space for the storage of hay.

The cement stable here illustrated is the property of Mr. Robert E. Griffith at Haverford, Pa., and was designed by Oliver Randolph Parry, architect, 1723 Chestnut street, Philadelphia, Pa. The work of erection was carried out by C. R. Knapp & Co., Philadelphia, Pa., specialists in concrete work of this character.

DESIGN No. 29



Floor Plan.—Scale  $\frac{1}{16}$  Inch to the Foot.  
Building 26 Feet Wide, Over All, 32 Feet.

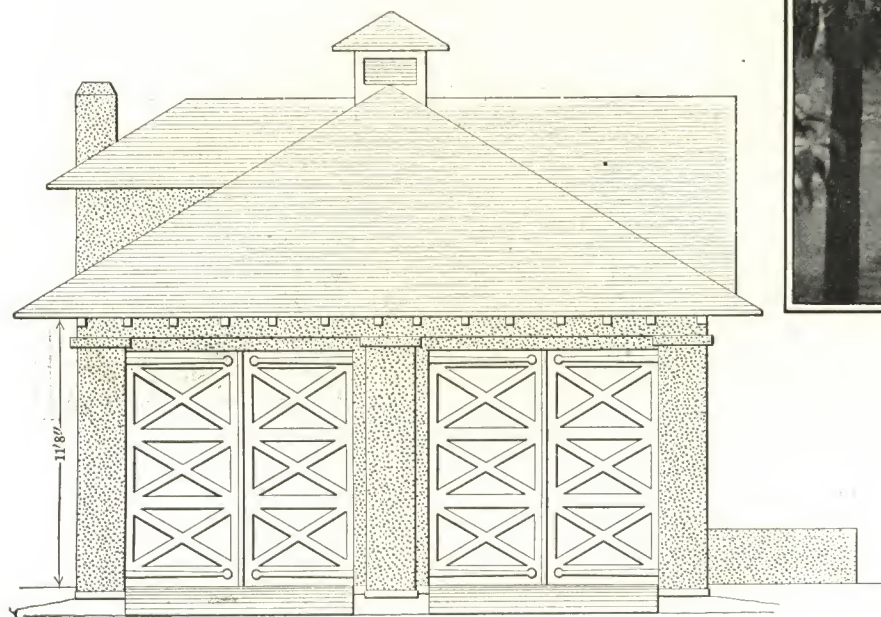
ARCHITECT:  
O. R. PARRY,  
PHILADELPHIA, PA.



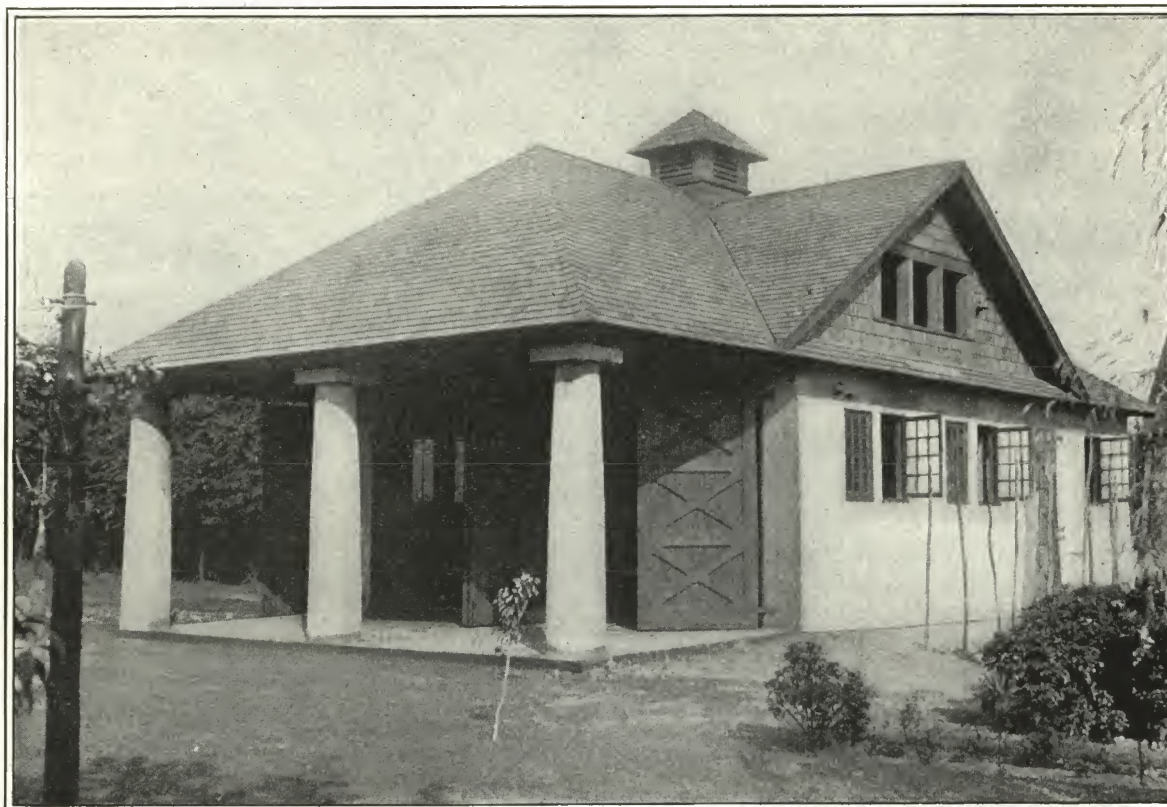
View of Stable and Surroundings as Seen from Beyond the Hedge.



DESIGN No. 29

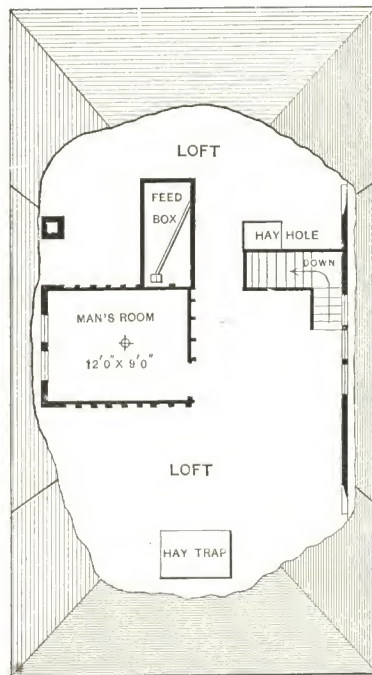


Front Elevation.—Scale,  $\frac{1}{8}$  Inch to the Foot.



Another View of the Building.

DESIGN No. 29



Plan of Hay Loft.—Scale  $\frac{1}{16}$  Inch to the Foot.



A View of the Stable as it Appears from the Opposite Side.



## DESIGN No. 30

**\$2200**

THE garage which constitutes the basis of this design is built of 6-in. terra cotta blocks on concrete trench walls carried below the frost line. The walls are plastered inside and outside directly on the terra cotta blocks, and the roof is covered with shingles.

The main entrance is by means of doors of the sliding type and there is an entrance door at the side, all as shown in the picture given herewith.

The space for automobiles has a concrete floor, while the floors of the chauffeur's room and of the bath room are of hard pine on screeds set in concrete. Under the floor are layers of tar paper to hold down the dampness.

At the left as one enters from the front of the garage is a gasoline pump connecting with the underground tank just outside the building and indicated by means of the dotted lines on the plan view. There is also a work bench near the side entrance and just beyond it is a gas radiator protected by a galvanized iron screen with grille on top. In the opposite corner and at the rear of the space for the automobiles is a Ruud gas water heater, made by the Ruud Manufacturing Company, of Pittsburgh, Pa. It is properly enclosed by means of a galvanized iron screen and has a vent register through the

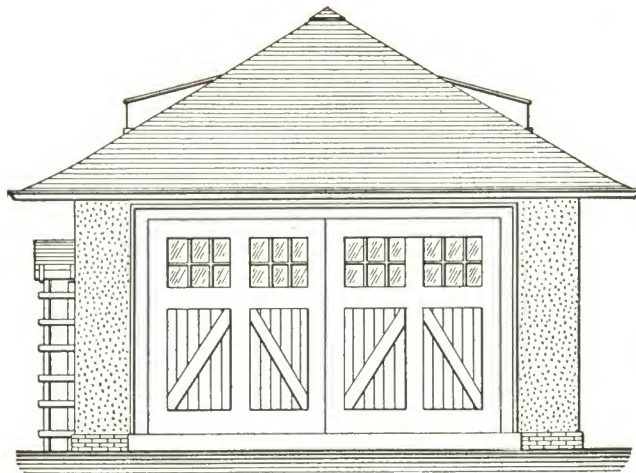
wall inside of the casing and vent pipe connected with the soil pipe vent so as to take care of all escaping gas and prevent the gas flames from igniting gases that may be formed in the garage from the handling of gasoline for the cars.

The bath room is fitted with closet, tub and wash basin, all plumbing being of the open type. The bath room is heated by a gas radiator, as is also the chauffeur's room, the position of the radiators being clearly indicated on the plan.

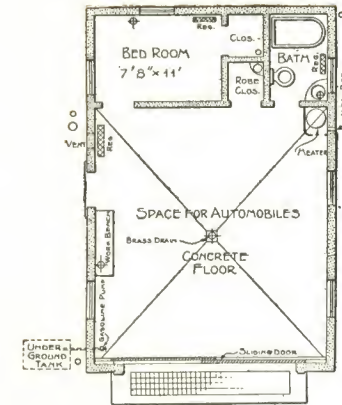
The garage is picturesquely located on the property of Mrs. Ida L. Samson on Wayne Street, Roxbury, Mass., and was built by the MacDonald & Joslin Company, 161 Devonshire Street, Boston, Mass., in accordance with drawings prepared by Rowe & Keyes, architects of Boston, Mass., and New York.

The cost of the garage complete was about \$2200, at which figure the building cost \$3.35 per square foot and 18.7 cents per cubic foot, cube computation being from bottom of footings to average height of roof.

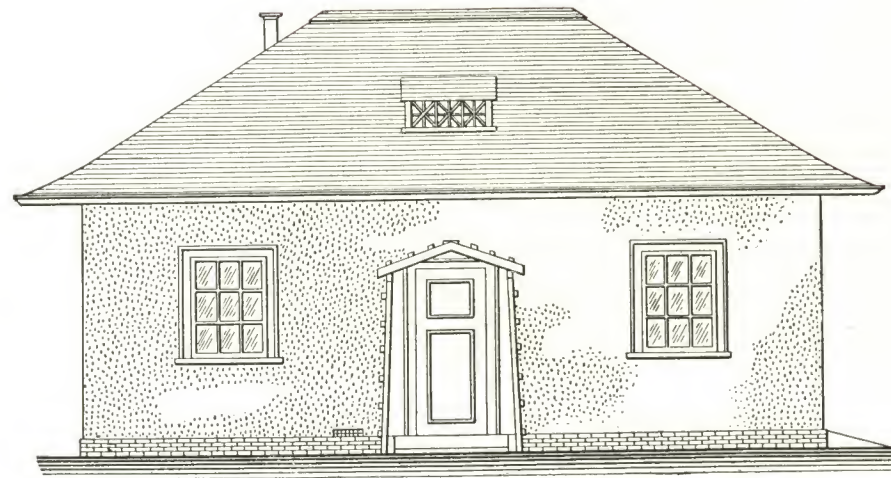
# DESIGN No. 30



Front Elevation—Scale,  $\frac{1}{8}$  Inch to the Foot.  
21 Feet Wide.



Plan.—Scale,  $\frac{1}{16}$  Inch to the Foot.



Side (Left) Elevation.—Scale,  $\frac{1}{8}$  Inch to the Foot.



DESIGN No. 30



General View as Reproduced from a Photograph of the Garage of Mrs. Ida L. Samson on Wayne Street, Roxbury, Mass.

*A Garage of Terra Cotta Blocks with Plastered Exterior.*

ARCHITECTS:  
ROWE & KEYES,  
BOSTON, MASS.





## DESIGN No. 31

**\$4000**

THE drawings herewith illustrate a reinforced concrete garage recently erected in the Borough of Richmond, Greater New York. The building is 105 ft. long, 40 ft. wide and 16 ft. to the top of the side walls. The walls are of reinforced concrete 12 in. thick, and with foundations carried 3 ft. below the level of the ground, the footings being 8 x 20 in. The molds for the walls, which are monolithic, with the exception of the front pilasters, were made of 2 x 4 in. studding placed 4 ft. on centers, securely braced, and with  $\frac{3}{4}$ -in. boarding on either side.

The concrete was composed of a mixture of 1 part cement to 2 of clean, sharp sand and 3 of 2-in. broken stone. The reinforcing was  $\frac{3}{4}$ -in. iron rods placed vertically 18 in. apart. The method of construction was to build the molds 3 ft. high at a time and mix the concrete by hand on mixing boards and fill in by bucket in the molds. When the walls were carried as high as it was possible to deposit the concrete from the floor, staging was built and the buckets handed up to laborers on the staging and then deposited. A block and fall were rigged up and tried, but the hand method was found to be the quicker and the more economical.

A feature of the work is apparent in the pilasters at the front built up of hollow molded concrete blocks filled in with concrete in mass. This gives all the advantages of the monolithic structure in combination with the finish of the molded block. This is a mode of construction that could very usefully be employed where the basements of frame buildings are constructed of molded concrete blocks, as it will give all the finish of the molded block

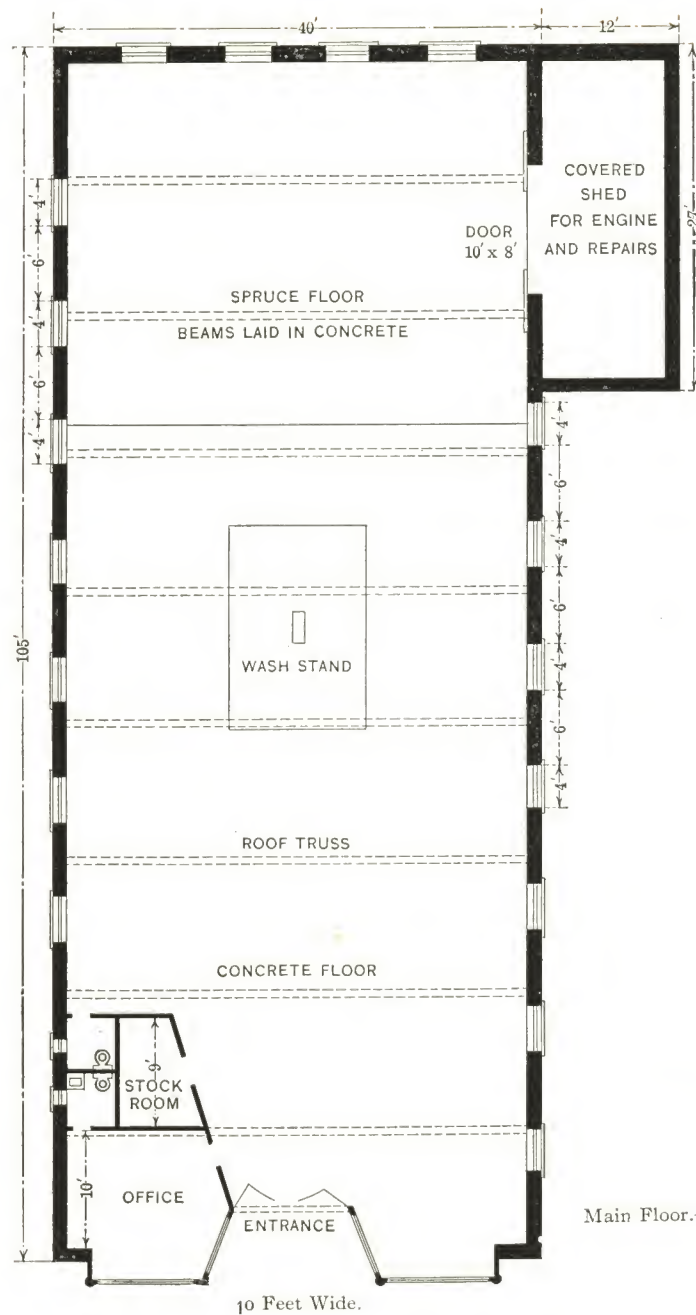
wall, at the same time having the advantage of being monolithic as well. It likewise saves all the trouble and expense of building "molds" and "forms" for the work.

The roof of the garage is formed of framed trusses, as shown on plan and section, the tension members being 1  $\frac{1}{4}$ -in. rods, while the compression members are of timber of the sizes shown on the section. The bottom and upper chords are 6 x 10 in., and the purlins are 2 x 10 in., placed 12 in. on centers. The whole is anchored into the walls by anchor bolts, as clearly indicated in the detail. The roof covering is  $\frac{3}{4}$ -in. rough boarding on the purlins with best charcoal tin above this, and the whole finished with a coating of tar and fine gravel, with roofing felt to finish off.

The floor at the inner end is of 1  $\frac{1}{2}$ -in. spruce, with 2 x 6 in. floor beams bedded in concrete. The remainder of the floor is of concrete 5 in. thick, laid on 12 in. of steam ashes thoroughly rammed. In the center is a washing space for cleaning the automobiles.

It is necessary to shut off from the main building any possibility of fire, so the repair shed shown on the plan is an addition to the main structure, and is separated from it by means of sliding doors lined with tin. The pediment and cornice at the front are formed of zinc, as indicated on the elevation. The entrance doors are 2 in. thick, framed and molded in four parts and hung to fold, as indicated on the plan.

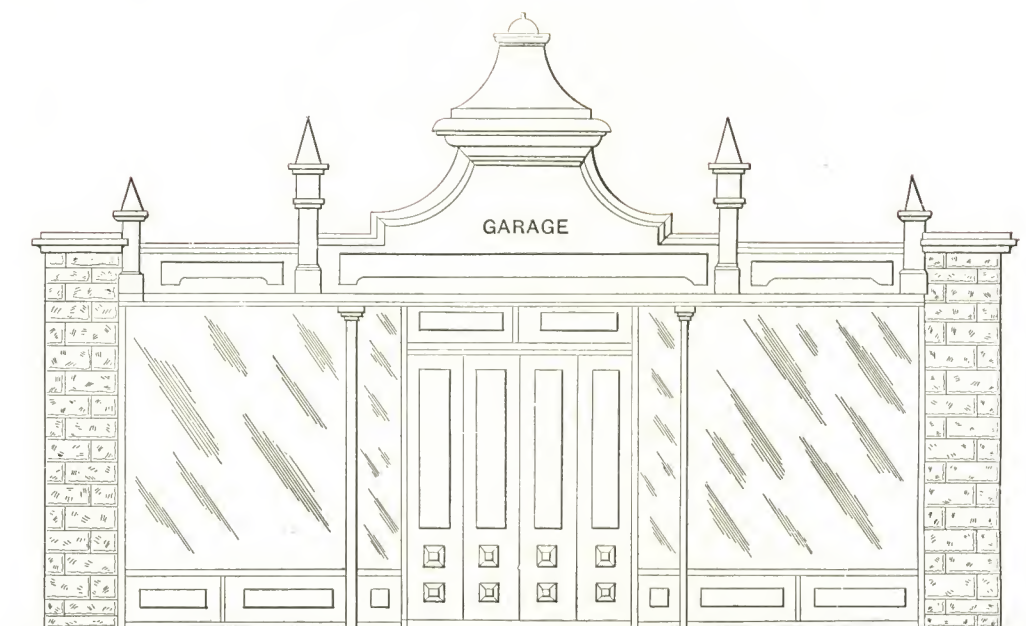
The cost of the garage as here shown was \$4000, and the drawings were prepared by Architect Thomas C. Perkins, Port Richmond, N. Y.



Main Floor.—Scale,  $\frac{1}{16}$  Inch to the Foot.

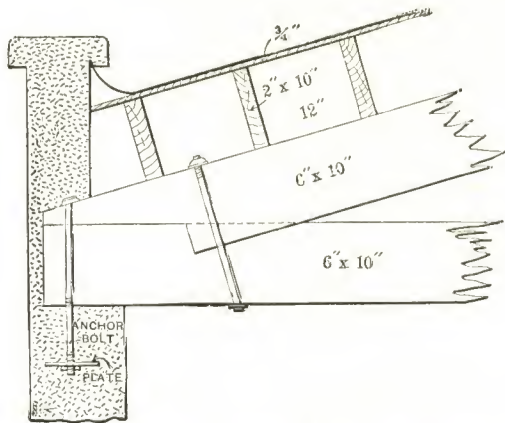
ARCHITECT:  
THOMAS C. PERKINS,  
PORT RICHMOND, N. Y.

DESIGN No. 31



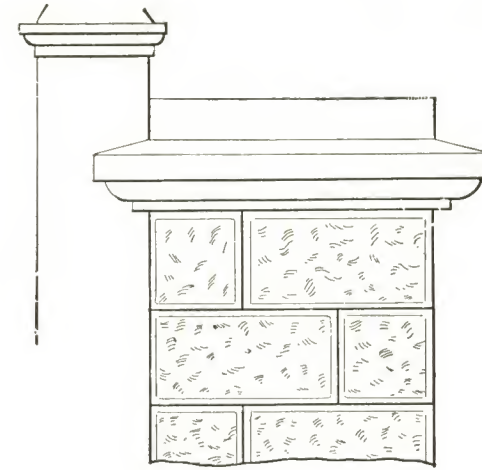
Front Elevation.—Scale,  $\frac{1}{8}$  Inch to the Foot.



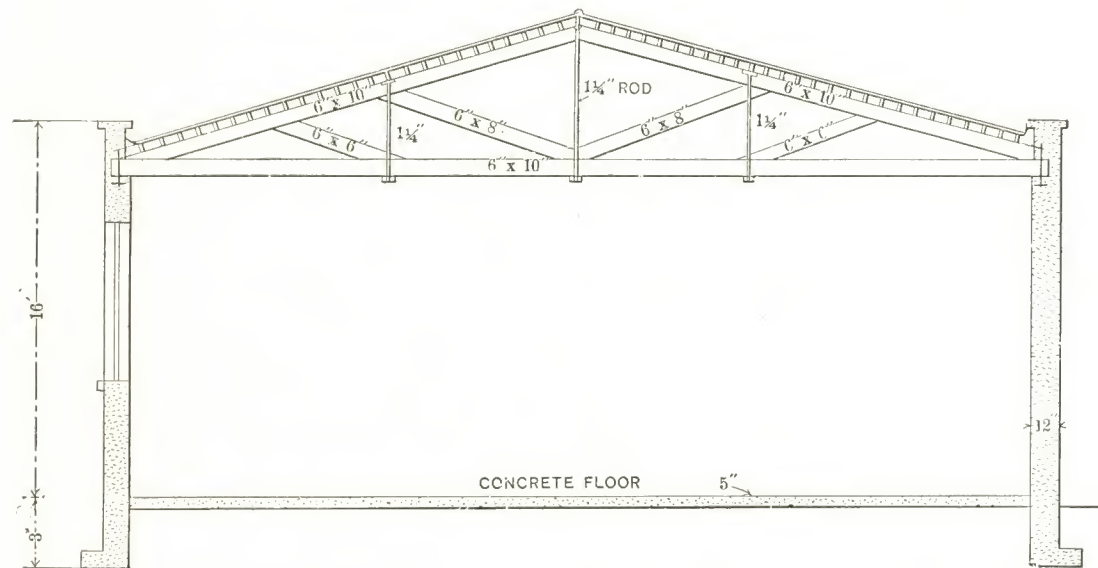


Detail of Roof Truss.—Scale,  $\frac{1}{2}$  Inch to the Foot.

# DESIGN No. 31



Detail of Front Pilaster.



A Vertical Cross-section through the Building.—Scale,  $\frac{1}{8}$  Inch to the Foot.

ARCHITECT:  
THOMAS G. PERKINS,  
PORT RICHMOND, N. Y.





## DESIGN No. 32

\$6000

THE problem in designing this garage so as to meet the desires of the owner was to produce a building for automobiles with a large studio on the second floor. In working out the design the architect bore in mind the fact that the building was to be placed on a conspicuous site of the estate, and also that when completed it should not convey too strongly, at first sight, the idea of a garage. The front hood or pergola treatment, with its large columns of cement, standing out as shown in the photograph, was built to conceal partially against a flat wall the large double swing doors as required in a garage of this character.

The architecture of the building is mission style with cement exterior and tile roof of striking effect. The same general treatment is carried out in connection with the fence, gate posts and other details bordering the path from the side entrance of the garage to the house of the owner.

The space for the automobiles has a 5-in. concrete floor with granolithic finish 1 in. thick, the pitch of the floor being toward the catch basin in the center, as shown on the plan. The granolithic finish extends to the height of the window sills above which the walls and ceilings are covered with cement plaster on wire lathing. The beam running parallel to the space wherein is located the sink and work bench is supported by 3½-in. lally columns made by the Eagle Column Manufacturing Company, Brooklyn, N. Y. The chauffeur's room has a wood floor over a concrete bed.

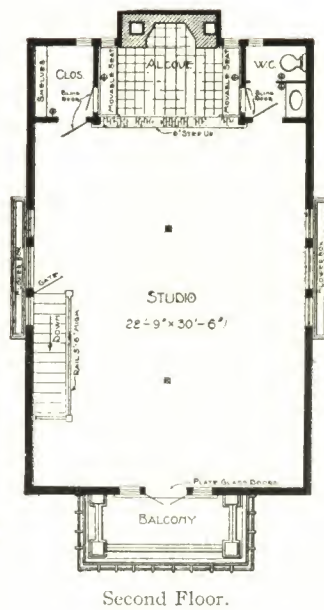
The bath room is equipped with wash bowl, water closet and a cast-iron shower bath. The floor is of concrete with granolithic finish. From the passageway, from which opens the bath room on the right and the chauffeur's room on the left, one reaches the heater room at the rear by descending a flight of four concrete steps. The heater room has a 5-in. concrete floor

with granolithic finish, cement plaster walls and ceiling upon wire lath. There is a 12 x 12 in. galvanized iron vent pipe to the chimney at the ceiling, and in the partition wall between the bath room and the garage proper are 12 x 12 in. vent registers with damper at the floor and ceiling. The drive and curb leading from the street to the garage are of concrete with granolithic finish.

In the garage proper and at the right and left of the passage leading to the rear rooms are polished brass pipe rope hangers supported by brass brackets. The floor joists are of hard pine 2 x 14 in. placed 12 in. on centers, while the rafters are 2 x 8 in. placed 20 in. on centers. The second floor of the garage is used as a studio and has a wood floor with batten board dado with base and plate rail to line of wall plate of the frame. The roof rafters are exposed and planed on three sides, giving a very impressive effect. The alcove at the rear has a 9-in. quarter-tile floor with brick border laid over a concrete filling on expanded metal. At the right of the alcove is a lavatory, beyond which is a water closet. At the left of the above is a closet 5 x 6 ft. in size, fitted with two shelves.

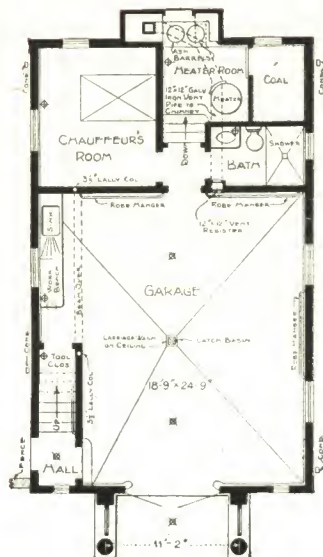
The balcony over the pergola entrance to the garage is covered with "M. F." tin, over which is a wooden floor laid open. The windows which give upon the balcony extend to the floor line and the double doors are glazed with plate glass. The entrance doors are 4 ft. x 8 ft. 6 in., and are 2½ in. thick. The fenders at the jambs of the doors are of concrete.

This garage is owned by Mr. F. M. Archer of Brookline, Mass., and was erected in accordance with drawings prepared by Mr. Harry Morton Ramsay, architect, No. 50 Bromfield Street, Boston, Mass. The cost of the building completed was about \$6000.



Floor Plans.—Scale,  $\frac{1}{16}$  Inch to the Foot.

# DESIGN No. 32

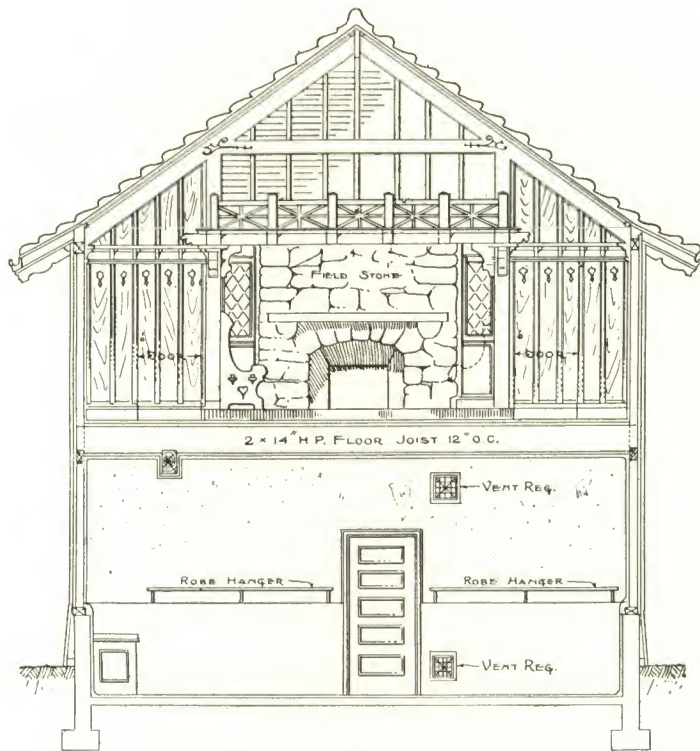


Direct Reproduction from a Photograph of the Cement Garage and Studio Building of Mr. F. M. Archer, Brookline, Mass.

ARCHITECT:  
HARRY MORTON RAMSAY,  
50 BROMFIELD ST.,  
BOSTON, MASS.



DESIGN No. 32



Sectional View of the Building from the Front.

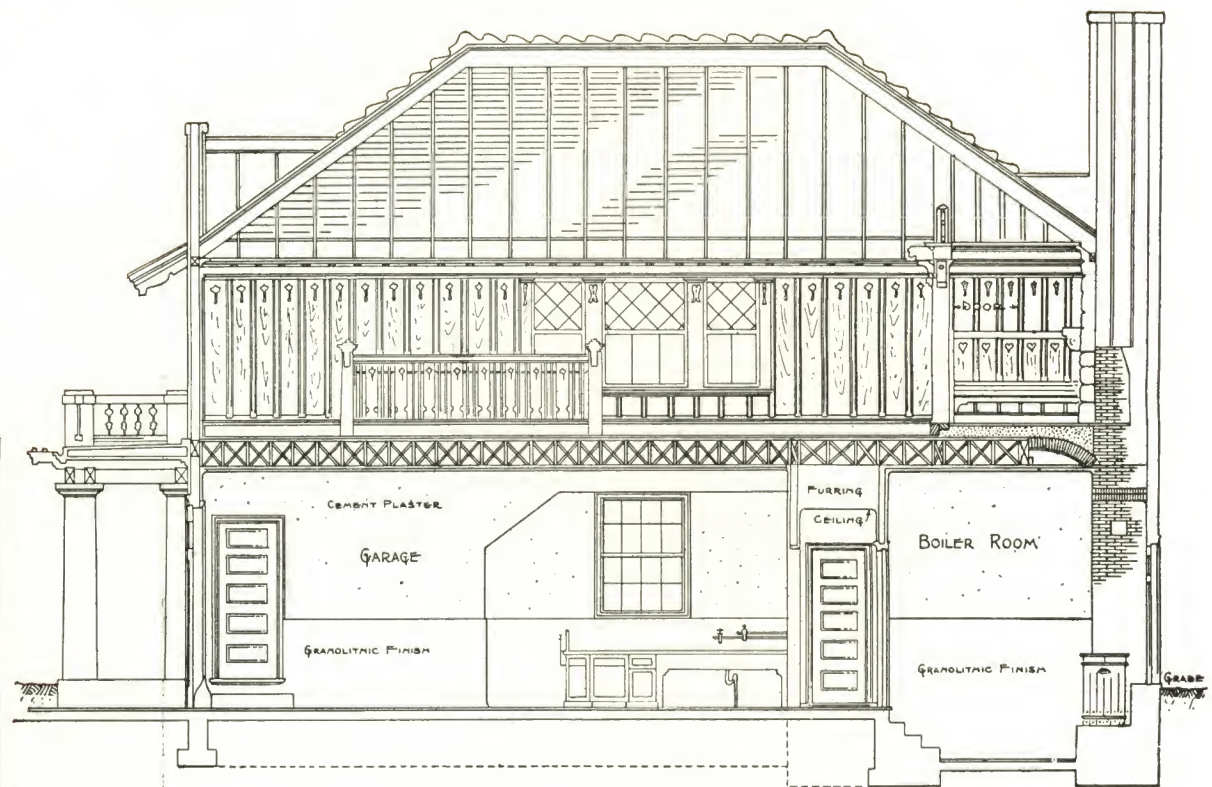


Interior View of Rear End of Studio, Showing Fireplace and Arrangement of Windows.

DESIGN No. 32



Interior View of Rear of Studio.



Side Elevation.



# DESIGN No. 33

\$9500

A MOST interesting example of the present day tendency to look after the comfort of employees is found in connection with the concrete building which forms the basis of this article and which is one of several concrete houses erected at what is known as their North Works by the National Tube Company at McKeesport, Pa. For the most part, the structure is used as a garage, but at one side is a waiting room which is intended especially for the convenience of the women and children who bring the lunches and dinners to men employed at the mill. The building itself is unusual in its features of construction in that its frame work consists of metal tubing to which was attached a series of vertical and horizontal wires and then expanded metal was fastened to them, after which the cement-concrete was applied.

A view of the building is presented by means of the accompanying half-tone engraving, the double doors giving entrance to the garage, while the doors at the side open into the waiting room. On the following page is a view looking down the waiting room toward the watchman's office, which is immediately beyond the large window shown in the background. The floor plan shows the general lay-out of the interior space, while the vertical section on the line A-A of the plan indicates the general construction employed.

No foundation walls are required in the construction of the frame-work because the cast iron base rests directly on a concrete pier and the upright columns rest on the cast iron base. The columns and beams are filled with concrete before the erection and to the upright columns are bolted the horizontal beams. When necessary, the beams and columns may be reinforced by trusses of pipe and wire, these trusses in all cases coming between the floor and the ceiling and between the outer and inner walls of the structure. The next step is to stretch wires around the beams to make the horizontal planes for the floors and ceiling and to make the vertical planes for the inner and outer walls. As the wires are passed around the beams and columns there results two planes of wires, each plane separate from the other by a distance equal to the diameter of the pipe used. In most construction work 4-in. pipe is used, which is  $4\frac{1}{2}$  in. outside diameter, thus leaving a space of  $4\frac{1}{2}$  in. between the wires.

For the floors, metal lath is tied on the under side of the wires and for

the walls on the inside of the wires. Concrete is then spread on the metal lath and around the wires for the floors in the same manner as would be the case if used over "forms." The walls and ceilings are plastered by the usual methods. After these operations are completed there is left between the floors and ceilings and between the outer and inner walls a confined air space. In case a wood floor is desired wooden sleepers are laid in the concrete before it sets.

This form of construction results in a monolithic building, every part of which is completely bonded to every other part in a most thorough manner.

The building is 50 x 60 ft. in plan and the roof is a slab of reinforced concrete. The floor of the garage proper drains from all sides to the 14-in. cast iron bell trap in the center. There is also a bell trap in the corner of the automobile pit, the latter being 4 x 12 ft. in plan and covered by 2-in. planks. The cesspools at the corners of the building are 2 ft. square by 2 ft. deep, and the down-spouts drain under the sidewalk to the gutter.

A cross-section of the pit on the line B-B of the plan is shown herewith. For the air and gasoline connections two pieces of 3-in. pipe 10 in. long extend through the rear wall of the building 6 in. below the grade line.

In the waiting room all ventilators in the wall are 16 ft. above the floor level. The risers for the 14-in. pipe are  $4\frac{1}{2}$  x 36 in. and the registers are 12 x 18 in. The risers for the 8-in. pipe are  $4\frac{1}{2}$  x 15 in. and the registers for it are 12 x 12 in. At the "sump," the duct enlarges from 18 x 30 in. to 24 x 36 in.

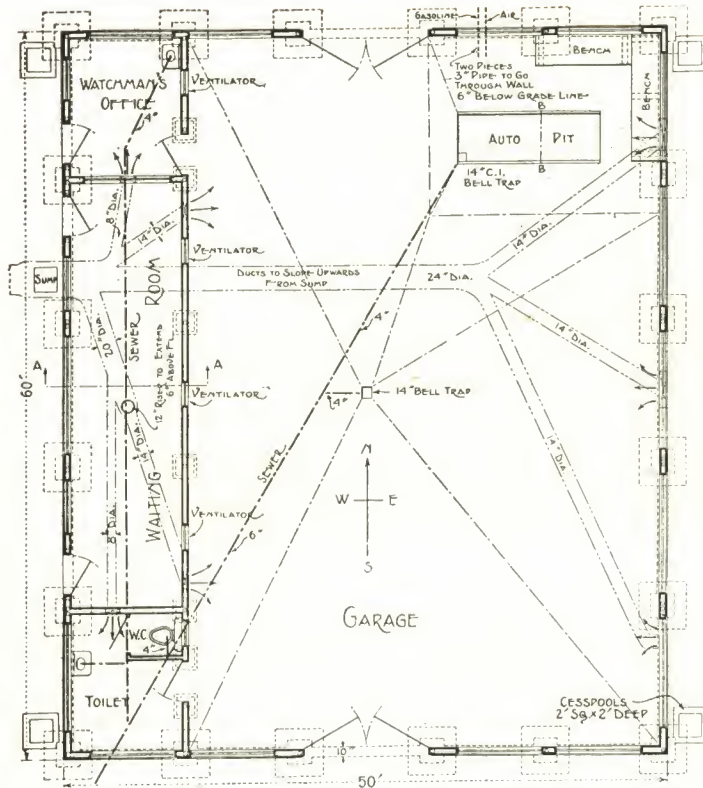
The swing doors at the front and rear entrances to the garage are each  $2\frac{7}{8}$  in. thick, 5 ft. wide and 12 ft. high. The outside doors to the waiting room and to the watchman's office are each  $2\frac{7}{8}$  in. thick by 3 ft. wide and 8 ft. high.

George T. Snyder of the National Tube Company, was the engineer in charge of this work, which was executed by employees of the company under patents of the Suspension Steel Concrete Company, 1808 Fisher Building, Chicago, the cost of the building, above the foundation and including the floor, being close to \$9500.

In the execution of the work Universal Portland cement was used.



DESIGN No. 33



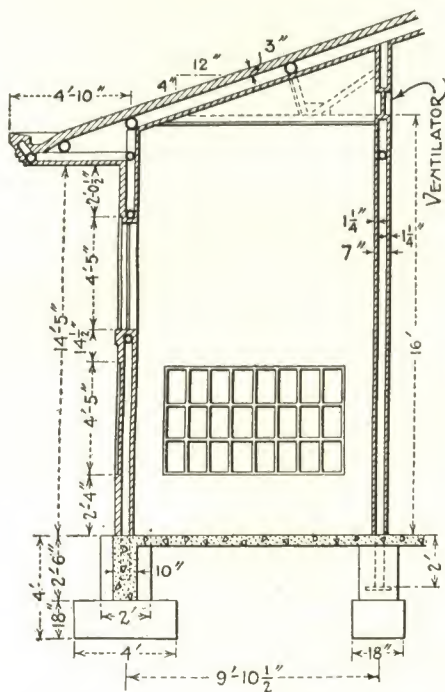
Plan of Garage and Waiting Room.—Scale,  $\frac{1}{16}$  Inch to the Foot.



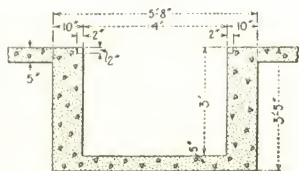
General View of the Concrete Building as Erected by the National Tube Company at McKeesport, Pa.

*Erected under the Supervision of George T. Snyder.*





Vertical Cross-section through Waiting Room on Line A-A of the Plan—Scale,  $\frac{1}{8}$  Inch to the Foot.



Cross-section through Automobile Pit, Taken on Line B-B of the Plan.



Interior View of Waiting Room Looking Towards Watchman's Office.

DESIGN No. 33

## A FEW SUGGESTIVE EXTERIORS

WE present herewith a few exteriors of private garages of cement construction which may not be without interest to architects and contracting builders. In the majority of cases here shown the exterior walls of the garages are of cement on metal lath, the exception being the building having the exterior walls of brick up to the line of the windows, above which the finish is in half-timbered effects.

Referring to the first picture, we have a neat design of cement exterior over hollow tile. The garage has a slate roof and a cement floor, is furnished with double swinging entrance doors, and has the main roof line extending down to form a hood over the driveway at this point. Another noticeable feature is the position of the windows which light the interior. The garage is located in one of the many beautiful suburbs of Boston. It was designed by Davis, McGrath & Kiessling of New York City and cost approximately \$700.

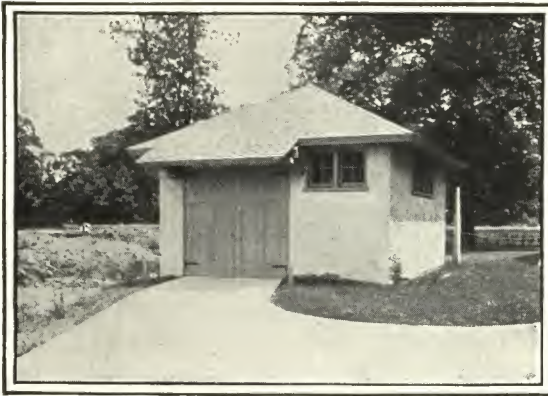
In the second picture, the design is of a somewhat more pretentious nature, and the capacity of the garage is sufficient for several cars, as well as

for sleeping quarters above for the chauffeur, if such an arrangement should be desirable. Here the building is covered with a pitch roof, with a dormer gable at the front and rear, and lighted by a double window. The main entrance doors are of the sliding type, with a private entrance to the extreme right. The foundations are of stone and the floor is of concrete.

Our third illustration shows a garage of clever exterior treatment, with its tile roof, double doors to the main entrance, and its suspended bay window. The floor is of concrete and the exterior is of cement on metal lath stapled to wood studs. This also is located in Eastern Massachusetts, and was designed by John P. Kingston of Worcester in the State named.

Our last picture differs somewhat in general design from those previously referred to, combining, as it does, brick gable walls up to the window sill, above which are cement panels with half-timbered treatment. It is situated in Campello, Mass., and was designed by Architect Charles A. Brigham of Boston.





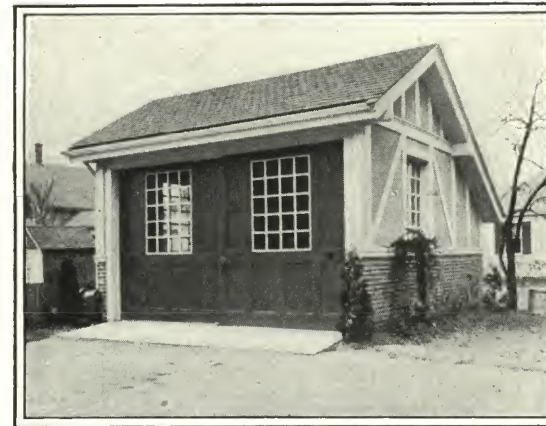
A Simple, yet Effective, Treatment.



The Tiled Roof Effect—a Noticeable Feature of this Design.



A Clever Treatment of a Simple Exterior.



A Brick and Half Timbered Treatment of the Exterior.

# CEMENT CONSTRUCTION FOR THE PRIVATE GARAGE

ONE of the many sources of the increased use of cement in building construction is the private garage, which is so extensively displacing the carriage house and stable in all sections of the country. The stimulus which the use of the automobile has received, combined with a constantly growing appreciation of its value as a medium of transit for both pleasure and business purposes, has created a demand for a housing that shall be, to a considerable extent at least, fire-resisting. As a consequence, the man who could heretofore afford a pair of driving horses, which, as a general proposition, were housed in a frame building, is now the possessor of a motor-car of some description. This, to be on the safe side, he keeps in a private garage that may possibly be the old carriage house and stable remodeled with an overcoating of cement plaster, with concrete floors; or it may be an entirely new structure of plain or reinforced concrete. In any event, the cement garage is decidedly on the increase, and is to be found wherever the runabout or motor-car is used.

It goes without saying that the designs and styles of the private garage are legion, although for the most part they are of rather plain, yet attractive construction. In cases, however, where the residence of the owner is of a somewhat pretentious character, the garage is usually of a design to harmonize with it and oftentimes is a very elaborate affair.

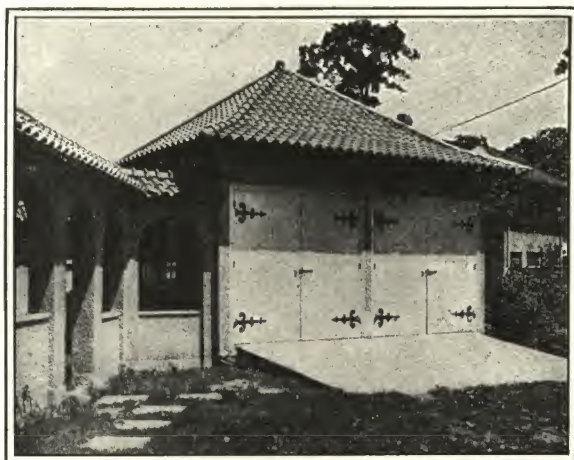
Various methods are followed in the construction of the private garage, some having the walls of hollow tile covered with cement plaster and a roof of tile; others having the exterior walls of cement applied to metal lath, stapled to wooden studs and having concrete floors and driveways, while some have the walls of hollow tile covered with cement plaster and a roof tile or slate, with practically no wood in any part of the construction. The latter method is, of course, fire-resisting to the fullest extent, and carries a correspondingly low rate of fire risk.

In the illustrations which we here present are shown three styles of private garage with cement exterior which afford suggestions to interested readers. In the first picture, the design is in keeping with the house and communicating covered way which appears at the left; the heavy projection of the rafters and the tile-covered roof giving a decidedly Spanish appearance to the finished structure. Here the walls are of slap dash, or stucco finish, with a concrete driveway and floor. The quaint hinges of the double entrance doors give a somewhat pleasing effect. The garage was designed by the owner and is one of many attractive housings for the private motor-car to be found in the suburbs of Boston.

In the second picture, is shown an altogether different style of private garage, but having outside walls of cement and a roof of slate. The double sliding entrance doors afford opportunities for a more ready and convenient entrance and exit of the vehicles which may be housed within the structure than would be the case were a single door used, but where a number of cars are involved the double entrance doors are most essential. This garage is also located in one of the suburbs of Boston and was designed by Architects Chapman & Frazer of the city named.

Coming now to the third picture we have a design differing in its general aspects from either of those mentioned above. Here the roof has the flat effect, with heavy projecting cornice and suggesting strongly the individual taste rather than following a popular style of architecture. The walls are cement coated, the floor and driveway are of concrete, and the double folding doors and window frames are of wood. The design is simple in its treatment and interior arrangement, yet is well adapted for the purpose for which it is intended.





A Cement Garage which Partakes of the Spanish in its Architectural Treatment.



Another Style of Cement Garage, and More Commodious than the One Shown in the Previous Picture.



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